MEDICAL LIBRARY

This Issue Exceeds 88,500 Copies

THE JOURNAL

OF THE

American Medical Association

Subscription, $7.00 | PUBLISHED WEEKLY | Single Copies, 25 Cents

VOLUME 105, No. 7 | 535 North Dearborn Street, CHICAGO, ILL. | AUGUST 17, 1935

CONTENTS AND SUBJECT INDEX

Atherosclerosis, the Important Form of Arteriosclerosis, a Metabolic Disease. Timothy Leary, M.D., Boston 475

Allergy and Cataracts. Ruby K. Daniel, M.D., Rochester, Minn. .481
Discussed by Drs. Woods, Vail, Buffington, Moore and Daniel.

Hyperglycemia: Evaluation in the Treatment of Diabetes Mellitus. Herman O. Mosenthal, M.D., New York 484
Discussed by Drs. Joslin, Kepler, Collens, Maxwell, Herold and Mosenthal.

A Study of Active Immunization Against Scarlet Fever in Charitable Institutions and Public Schools of Philadelphia. J. Norman Henry, M.D., Philadelphia 488
Discussed by Drs. Toomey, Lucchesi, Melnick and Henry.

Treatment, Modification and Prevention of Measles by Use of Immune Globulin (Human). I. M. Levitas, M.D., Westwood, N. J. 493

Uveoparotitis. Samuel J. Cohen, M.D., and Meyer A. Rabinowitz, M.D., Brooklyn 496

The Significance of Pyuria in Children. Alexander B. Hepler, M.D., Seattle, and Russell T. Scott, M.D., Lewiston, Idaho 499

The Antidotal Action of Potassium Permanganate. Robert A. Hatcher, M.D., New York 502

CLINICAL NOTES, SUGGESTIONS AND NEW INSTRUMENTS

Karaya Gum Asthma. Samuel M. Feinberg, M.D., Chicago 505

Studies on Capillary Fragility: A Device for the Study of Capillary Hemorrhage. Irving S. Cutter, M.D., and Carl A. Johnson, M.D., Chicago 505

GLANDULAR PHYSIOLOGY AND THERAPY

Gastro-Intestinal Principles Excepting Those Having Antianemic and Circulatory Effects. A. C. Ivy, M.D., Chicago 506

COUNCIL ON PHYSICAL THERAPY

Tissue Heating by Short Wave Diathermy. Bernard Mortimer, M.D., and Gertrude Beard, R.N., Chicago 510

COUNCIL ON PHARMACY AND CHEMISTRY 510

COMMITTEE ON FOODS 512

EDITORIALS

Our British Visitors 514

Immune Globulin (Human) and Measles 514

The Pan-American Medical Association 516

CURRENT COMMENT

Frozen Monkeys 517

Malaria in a Village 517

(Subject Index on next page)

ASSOCIATION NEWS 518

A.M.A. CONVENTION • KANSAS CITY, MO. • MAY 11-15, 1936

BICKHAM'S OPERATIVE SURGERY

"THE leading American encyclopedia of operative procedures," says the American Journal of Medical Sciences.

"A monumental compilation of every operation of importance . . . Should be owned by every practicing surgeon," says the London Lancet.

"The outstanding American work on technical surgery," says the Pennsylvania Medical Journal.

"It is so readable that the most intricate surgical procedure is made obvious to all," says The Military Surgeon.

"A complete encyclopedia of operative surgery which every general and special surgeon should possess," says Clinical Medicine and Surgery.

"We have seen nothing better in its field than this very fine work of Bickham's," says the Canadian Journal of Medicine and Surgery.

"The work that one will first turn to for information and guidance on operative surgery," says the American Journal of Surgery.

Read details of SAUNDERS PAYMENT PLAN—Page 3

SUBJECT INDEX TO THIS ISSUE

The letters used to explain in which department the matter indexed appears are as follows: The Star (*) indicates an Original Article; "ab," abstract; "E," Editorial; "C," Correspondence; "Ml," Medicolegal; "ME," Medical Economics.

Abortion, contagious, in cattle....530
Adrenals, hypertension simulating thyrotoxicosis....ab-545
Allergy and cataracts....*481
American Board of Orthopedic Surgery....521
Chemical Society....521
Congress of Physical Therapy....521
Anemia, early, of premature infants....ab-547
pernicious, "methemoglobin test" for antianemic action of liver extracts....ab-552
Anesthesia in obstetrics, questionnaire....ab-545
divinyl ether....525
Angina, Vincent's, Wassermann test....532
Animals, comparison of blood of man and...533
Appendix, pseudomyxoma of peritoneum..ab-553
Arteriosclerosis, heart disease and chronic congestive failure....ab-539
atherosclerosis important form of....*475
Arthritis, chronic polyarthritis during age of growth....ab-551
Association News....518
Asthma after exposure to sulphur dioxide...530
from Karaya gum....*505
Automobile drivers, tests for, Illinois state fair....519
lighting, regulation, England....523
Bacteriologists organize branch society....521
Bacterium granulosis, relation to trachoma....ab-543
Blood, conserved, syphilitic virus destroyed in....ab-554
convalescent, in puerperal septicemia....532
diastase, in gastritis....ab-552
fat, microdetermination....ab-553
of man and animals, comparison....533
pressure, high, simulating thyrotoxicosis....ab-545
pressure, high, too much reliance on laboratory results....523
pressure, relation to blood sugar....*485
sugar, hyperglycemia without glycosuria.*484
tests with vanadic acid to determine effects of x-rays....ab-548
Board Examinations....533
Body weight, loss during muscular work..ab-540
Book Notices....535
Books Received....Adv. Page 29
Brain abscess, symptoms in....ab-544
air shadow normally produced by choroid plexus....ab-541
surgery....526
British visitors....E-514; 518
Bureau of Investigation....528
Calcium deficiency in childhood....ab-540
Cancer, discussed at German Surgical Society....524
reactions of Klein....525
survey, Hawaii....521
Capillary fragility; device for study of hemorrhage....*505
Carotene, absorption....ab-548
Cataracts and allergy....*481
Cattle, contagious abortion in....530
Celiac Disease, insulin and dextrose treatment....ab-547
Cholecystokinin....*507
Cholesterol and atherosclerosis....*475
Choline....*509
Chondrosarcoma....ab-546
Choroid Plexus, air shadow normally produced by....ab-541
Clerc, A., first lecture at Hôpital de la Pitié....524
Colds, survey of recent work....ab-548
Committee on Foods....512
Congress, U. S., medical bills in....519; 521
Council on Pharmacy and Chemistry....510
Council on Physical Therapy....510
Deaths....526
Dental Practice Acts; advertising; statutory restrictions upheld....Ml-538
Dextrose, celiac disease treated with....ab-547
Diabetes Mellitus and pulmonary tuberculosis....ab-541
hyperglycemia without glycosuria....*484
in children, protein deficient fruit-vegetable diet in....ab-551
Diagnosis, too much reliance on laboratory results....523
Diathermy, tissue heating by short wave...*510
Diphtheria, electrocardiographic disorders in....ab-551
toxoid, possible reactions to....532
Duodenin, islet stimulating hormone....*508
Duodenum, arteriomesenteric compression causes gastromegaly....ab-547
Eczema, allergic....ab-540
Embolism....525
Endotheliomas, so-called, of pleura....ab-553
Enterogastrone....*508
Epilepsy, diagnosis, induced water retention in....ab-549
quantitative determination....ab-540; ab-546
Ethmoid sinuses, possible infection....531
Eye, lysozyme, defense factors....ab-544
Food and Drug Administration, new units for research....522
Foreign Letters....522
Freezing, restoring frozen monkeys to life by "Dr." Willard....E-517
Gallbladder, calcification....ab-550
Gastrin, stomach hormones....*506
Gastro-Enteritis due to contaminated milk..519
Gastro-Intestinal Tract hormones....*506
Genitals, cancer, histology and prognosis.ab-553
German Surgical Society, annual session...524
Glaucoma....531
Goiter, Exophthalmic, hypertension simulating....ab-545
Gonorrhea, diagnosis, Corbus skin test...ab-542
infection of seminal vesicles....533
Government Services....522
Hair, use of henna white on....532
waving fluid, Karaya gum asthma from..*505
Headache, occipital, in intestine disorders..532
Health officer, position open for, New Mexico....520
public, résumé, England....522
rural health contest, Glynn County wins, Georgia....519
Hearing, reflex contraction of muscles of middle ear as indicator....ab-542
Heart, arteriosclerotic disease and chronic congestive failure....ab-539
electrocardiograms, method of taking...ab-539
electrocardiographic disorders in diphtheria....ab-551
murmur heard only in horizontal position.532
muscle infarct....ab-554
Heating of tissue by short wave diathermy.*510
Helmets, sand blast....533
Hemophilia....526
Hemorrhage, capillary, device for study...*505
Henna white, use on hair....532
Hernia, incisional....ab-543
Histamine, gastric hormone....*507
Immune Globulin (Human) for measles....*493; 510; E-514
Incretin, islet stimulating hormone....*508
Indian Medical Service....522
Infants, premature, early anemia of....ab-547
Insulin therapy in menstrual disorders...ab-554
therapy in celiac disease....ab-547
Insurance, International Congress on Life Assurance Medicine....522
Intestines hormones....*507
disorders, mechanics of occipital headache in....532
motility disorders....ab-552
Karaya gum, asthma from hair waving fluid....*505
Laboratory results, too much reliance on...523
Lactation with tumor of hypophyseal infundibulum....ab-550
Lead arsenate as spray in orchards, dangers.531
Lecithin....*509
Lipoids, metabolism and atherosclerosis....*475
Liver extracts, "methemoglobin test" for antianemic action....ab-552
insufficiency, santonin test in....ab-550
Lungs, infection after exposure to sulphur dioxide....530
Lymph Glands, dinitrophenol and....532
Lymphedema of extremities....ab-547
Lysozyme....ab-544
Malaria epidemic in village 30 miles from Cleveland....E-517
increase in, Alabama....518
Marriages....526
Matas, Rudolph, resigns from Touro Infirmary....519
Maternal mortality and morbidity....ab-549
Measles, treatment, Immune Globulin (Human)....*493; 510; E-514
Medical Examinations and Licensure....533
Medicolegal....538
Meetings, Coming Meetings....538
Meningitis, benign lymphocytic choriomeningitis....ab-545
evaluation of symptoms....ab-544
Meningo-Encephalitis, mumps....ab-544
Menstruation disorders, insulin therapy..ab-554
Metabolism and atherosclerosis....*475
Milk, contaminated, gastro-enteritis due to.519
vitamin D, regulations on sale, New York.520
Monkeys, frozen, restoring them to life by "Dr." Willard....E-517
Narcotics Limitation Convention....521
News....518
Nicotine poisoning, industrial....ab-551
Nitrogen retention, nonprotein....530
*di*Nitrophenol and lymph glands....532
Obesity in children; glandular therapy....532
Pan-American Medical Association....E-516
Pancreas, raw, oral administration....*509
Pancreatin, orally....*509
Parotitis, meningo-encephalitis....ab-544
uveoparotitis....*496
Pemphigus, epidemic, of new-born....ab-549
Pepsin, administration....*508
Peptic Ulcer, perforation....ab-546
surgical treatment of nonresectable duodenal....ab-553
Peritoneum, pseudomyxoma....ab-553
Physicians, British, visit United States, ...E-514; 518
hobby exhibit, Minnesota....519
married women, employment of, England..522
Pituitary Body, tumor with galactorrhea..ab-550
Placenta extract, use in measles....*493; 510; E-514
Pleura, so-called endotheliomas....ab-553
Pneumothorax, contralateral....ab-550
Poliomyelitis, Boy Scout jamboree canceled..521
Porter, Langley, term extended....518
Potassium permanganate, antidotal action..*502
Pregnancy, quantitative determinations of prolan....ab-546
quantitative determination of estrogenic substance....ab-540; ab-546
Prostate, surgery of....526
Pseudomyxoma of peritoneum....ab-553
Puerperium, convalescent blood in septicemia....532
mortality and morbidity....ab-549
Pyuria in children....*499
Queries and Minor Notes....529
Radiology, Denver Club....518
Rhode Island Medicolegal Society, 50 years old....520
Rocky Mountain Spotted Fever, Iowa....519
Roentgen Rays, effects, determined by blood tests with vanadic acid....ab-548
Salivary Glands hormones....*506
Salyrgan injection, complications after?..ab-552
Sand blast helmets....533
Scarlet Fever, immunization, Philadelphia.*488
declines, West Virginia....520
Scurvy, cevitamic acid for....ab-539
Secretin....*507
Sella Turcica, tumors, x-ray diagnosis....ab-541
Septicemia, puerperal, convalescent blood in.532
Shock syndrome....ab-542
Skin, tuberculosis, tuberculin treatment..ab-548
Society Proceedings....538
Stanford University graduate courses....518
State Board Examinations....533
Sterilization, sand blast helmets....533
sexual, Germany....525
Stomach, enlargement from arteriomesenteric compression of duodenum....ab-547
hormones....*506
inflammation, diastase in blood....ab-552
Sulphur Oxide, asthma and infection after exposure to....530
Surgery, German Surgical Society....524
menace of operations....526
Syphilis, treatment....531
virus, destruction in conserved blood...ab-554
Thrombosis....525
Tissue heating by short wave diathermy...*510
Tonics and Sedatives....Adv. Page 22
Tonsillectomy, plastic operations on posterior pillars after....532
Trachoma, Bacterium granulosis relation to....ab-543
Tubercle Bacillemia, evaluation of previous studies....524
Tuberculin, sensitivity of skin to....ab-550
Tuberculosis, early diagnosis....529
pulmonary, and diabetes....ab-541
pulmonary, atopic annoyances in....ab-542
pulmonary, caverns, "spontaneous" healing....ab-554
Typhoid carriers, New York....520
Typhus, vaccination with living virus....524
Undulant Fever, experimental brucellosis.ab-544
Urinary Tract disease in pyuria....*500
Urine, alkalinity....531
sugar, false positives in Benedict test....533
Uveoparotitis....*496
Vanderbilt University, Rockefeller gift to...520
Vision in glaucoma....531
Vitamin A, absorption....ab-548
Wassermann Test in Vincent's angina....532
Willard, Ralph S., restoring frozen monkeys to life....E-517
Work, muscular, loss of weight....ab-540

THE JOURNAL of the American Medical Association is published weekly by the American Medical Association, 535 North Dearborn Street, Chicago, Ill. Subscription price, $7.00 a year. 25c a copy. Canadian $8.50. Foreign $11.00. Entered as second class matter June 25, 1885, at the Postoffice at Chicago, Ill., under Act of March 3, 1879.

Volume 105. No. 7. *Copyright 1935 by the American Medical Association.*

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 105, No. 7 CHICAGO, ILLINOIS AUGUST 17, 1935

ATHEROSCLEROSIS, THE IMPORTANT FORM OF ARTERIOSCLEROSIS, A METABOLIC DISEASE

ELEVENTH LUDVIG HEKTOEN LECTURE OF THE FRANK BILLINGS FOUNDATION OF THE INSTITUTE OF MEDICINE OF CHICAGO

TIMOTHY LEARY, M.D.
BOSTON

Though printed records of the lesions of arteriosclerosis first appear in the works of the anatomists of the sixteenth century, proof that the disease has existed from early times was disclosed by Shattock's [1] study of the mummy of Amenhotep II and by Ruffer's [2] observations in mummies dating from the eighteenth dynasty (about 1576 B. C.) to the twenty-seventh dynasty (about 525 A. D.). This has significance, since any agency brought forward as a cause of arteriosclerosis must meet the test of possible availability during a period of at least thirty-five centuries. From the records of early anatomists it is evident that the arterial changes were looked on as wholly incidental to age and therefore natural and not disease processes. Though specific descriptions of the lesions are found in seventeenth century publications, appreciation of the pathologic character of the process did not manifest itself until the eighteenth century. Morgagni in his De sedibus et causis morborum in 1761 included studies of the disease in smaller arteries, as well as the aorta, and associated chest pain with coronary hardening, which Crell had described in 1740. However, the disease was looked on as of purely pathologic interest, in spite of Heberden's concept of angina and Jenner's redemonstration of its relation to coronary hardening. With Virchow's studies of arteriosclerosis, which included recognition of the association of fatty substances with the lesions, clinicians began to consider seriously for the first time the clinical implications of the disease. Indeed, the clinical study of coronary sclerosis in America had its beginning only within the last twenty years, largely through the pioneer work of Herrick.

With reference to the cause of the disease, MacCallum [3] said in 1922:

> Arteriosclerosis is one of those diseases difficult to explain because it develops so slowly through long years of life during which a great many possible causes have had an opportunity to affect the tissues. Our brilliant discoveries as to the etiology of disease come most readily when the transition from health to a pathological state is sudden and easily recognized by symptoms. Hence every conceivable idea has been expressed and tenaciously maintained with regard to this condition and many of them are so vague and ill-supported that it is wearisome to discuss them. None, however, is clearly demonstrated to have a definite bearing on the etiology of arteriosclerosis and we are quite as ignorant of the underlying cause as were our forefathers in the days of Morgagni.

In his textbook in 1932 MacCallum [4] further said "We are at present, in spite of numerous theories, practically ignorant of the cause of arteriosclerosis." This reflects in general the opinion of pathologists here and abroad.

The title of this paper includes two propositions: 1. That atherosclerosis is the important form of arteriosclerosis. 2. That atherosclerosis is a metabolic disease. Extensive discussion of the literature is rendered unnecessary by the review of the subject published by the Josiah Macy Jr. Foundation.[5]

The human material for this study has been obtained from postmortem examinations of subjects in the medical examiner service of Suffolk County, supplemented by specimens of aortic and coronary lesions from the department of pathology of the Boston City Hospital, through the courtesy of Dr. Frederic Parker Jr., and specimens of aortic lesions in children from the Children's Hospital, through the courtesy of Dr. Sidney Farber.

The experimental material has been produced in cholesterol fed rabbits.[6]

ATHEROSCLEROSIS IS THE IMPORTANT FORM OF ARTERIOSCLEROSIS

What is atherosclerosis? Virchow's studies drew attention to the fatty substances that are found so often in the lesions of the disease. Marchand named the condition atherosclerosis, from the Greek ἀθήρη, mush or porridge, because of the consistence of some of the fatty matter found in the disease. Aschoff [7] extended and modified the observations of Virchow and divided the fatty processes into (1) the more or less physiologic and temporary deposit of fat in the intima of the young and (2) the definite disease process atherosclerosis. The lesions arise constantly in the intima, though late extension to the media may occur.

In this discussion of arteriosclerosis, in agreement with other writers on the subject, the inflammatory forms of arteritis including those due to syphilis, tuberculosis, rheumatism, typhoid and other mycotic agents, periarteritis nodosa, thrombo-angiitis obliterans and

1. Shattock, S. G.: Proc. Roy. Soc. Med. 1908-1909, Path. Sect., p. 122.
2. Ruffer, M. A.: On Arterial Lesions Found in Egyptian Mummies, J. Path. & Bact. **15**: 453, 1911.
3. MacCallum, W. G.: Physiol. Rev. **2**: 70 (Jan.) 1922.
4. MacCallum, W. G.: A Textbook of Pathology, Philadelphia, W. B. Saunders Company, 1932.
5. Cowdry, E. V.: Arteriosclerosis, A Survey of the Problem, New York, Macmillan Company, 1933.
6. This part of the work was aided by grants from the Committee on Scientific Research of the American Medical Association.
7. Aschoff, Ludwig: Lectures on Pathology, New York, Paul B. Hoeber, 1924.

other forms of obliterating endarteritis and repairing thrombosis are excluded. Hypertension per se is a distinct entity. It is of importance, probably through pressure, in favoring the initiation and progress of arteriosclerotic lesions. Only in this relation is its association included.

There remain only two forms of arteriosclerosis. Atherosclerosis, with the foregoing exclusions, is practically the only form of the disease arising in the aorta and its visceral branches. It is in particular the exclusive form encountered in coronary sclerosis and is the lesion occurring in the cerebral vessels and in the larger renal vessels.

In the peripheral arteries it is not rare to find in elderly persons, and particularly in elderly persons with diabetes, the form of medial sclerosis described by Mönckeberg.[8] This lesion is marked by necrosis of muscle fibers in the media followed by calcification and often by bone formation. The process is essentially limited to the peripheral vessels, occasional examples being found in tumors and in the cerebellum. In Mönckeberg's sclerosis the calcification of the media with or without bone formation may produce complete ringing of the vessel and its conversion into a rigid tube. Though the calcification may occasionally extend into the intima and though the bony nodules may rarely narrow the lumen, the general effect of this form of sclerosis is to fix the caliber of the vessel in its largest capacity, perhaps because of loss of tonicity of the muscle layer. In the unmixed form the vessels are usually found dilated and with free lumens. When the lumen is considerably narrowed it is usually because of a superimposed atherosclerosis, arising independently in the intima. Disturbances of the circulation, almost without exception, are due to the engrafted atherosclerosis.

From all of the foregoing it may be concluded that atherosclerosis is the important form of arteriosclerosis.

ATHEROSCLEROSIS IS A METABOLIC DISEASE

With the growth of experimental methods, efforts were made to reproduce the lesions of arteriosclerosis in animals. Since stresses appeared to be factors in its production, various physical methods, destined to provoke stress conditions, were practiced but without definite results. Epinephrine was known to increase the blood pressure, and series of experiments with this agent were carried out. The resulting lesions were medial, with necrosis and calcification, resembling the Mönckeberg type of sclerosis. Recent work with viosterol produced similar results.

The constant association of fats with atherosclerosis led to dietary efforts to reproduce the lesions. To the Russian school belongs most of the credit for the production of intimal lesions in the arteries, first by the feeding of fatty foods and later by the feeding of rabbits with cholesterol.[9] This work was not accepted by pathologists generally. Criticisms were made that the rabbit was not a suitable animal for experimentation in arteriosclerosis, that the results were due to the use of perverted diets, that the lesions described did not correspond exactly to the lesions of human atherosclerosis. The condition produced in the animal was referred to, often contemptuously, as the "cholesterol disease of rabbits."

My interest in arteriosclerosis arose out of observations that as a class persons suffering from alcoholism appeared to show a lesser degree of atherosclerosis than their ages would justify. A study of the lesions of coronary sclerosis, fatal examples of which disease are common in my material, led to the following conclusions:[10]

1. Atherosclerosis is a disease and not the inevitable consequence of age, since it appears in the young and may be highly selective in its localization. 2. The characteristic lesion in youth is a fibrosis associated with the presence of lipoid cells, which do not accumulate in large aggregations, because of the growth of the fibrous tissue. 3. The characteristic lesion at older ages is the accumulation of large collections of lipoid cells with minimal connective tissue support. As a result of poor nutrition massive necrosis occurs, giving rise to so-called atheromatous "abscesses." 4. The standard cause of death in the young is thrombosis following subendothelial necrosis which extends to the endothelium. 5. The standard cause of death in the older group is the rupture of an atheromatous "abscess" into the lumen, usually followed by thrombosis. 6. The process is primary in the intima; stresses favor the localization of the lesions; morphologic lesions in the elastica and media occur secondarily. 7. The disease is not inflammatory in origin.

A comparative study of the lesions of human coronary sclerosis and experimental coronary sclerosis in the rabbit led to the following conclusions:[10]

1. The lesions of human atherosclerosis can be reproduced in the rabbit by the feeding of cholesterol. 2. The fibrosis which is characteristic of human coronary lesions in the young is the characteristic lesion in cholesterol atherosclerosis in young rabbits. Fibrosis is therefore a reaction of youth and not of species. 3. The evolution of the lesions through lipoidosis, lipoid cell formation and fibrosis, more rapidly produced in experimental animals, can be followed in greater detail in these animals than in human lesions, in which progress is so slow that the stages in the progression are distinguished with difficulty.

The results of this work did not clearly explain why in the young the response to the presence of cholesterol was fibrosis, while in the old little or no fibrosis appeared.

Attention was then centered on the lesions of the human aorta. The average physician mentally pictures atherosclerosis from his memory of the gross lesions he has seen in the aorta. Moreover, the aortic lesions are so varied that it is difficult to believe that a single agent should produce so kaleidoscopic a series of processes. Exhaustive detailed studies of the histology of these lesions had been carried out, but the reason for their variety had not been disclosed.

The Imbibition of Lipoid.—All investigators agreed that the picture begins with the appearance beneath the aortic endothelium of phagocytic cells containing fatty material. The first question suggesting itself was the method by which this lipoid, probably imbibed, reached the standard sites in the aorta. Edema of the intima occurs not rarely with swelling and stretching of the endothelium. This could well favor the introduction of foreign material. Whether it is the actual forerunner of lipoid deposit is debatable. The massive forms of edema, covering large areas of the aortic surface, can hardly be associated with the beginnings of lipoid infiltration, since no fatty lesions extending over such great areas are found. Moreover, this edema has the appearance of a terminal process arising shortly before death and usually in toxic cases. Minor degrees of

8. Mönckeberg, J. G.: Virchows Arch. f. path. Anat. **171**: 141, 1903.

9. Anitschkow, N., and Chalatow, S.: Centralbl. f. allg. Path. u. path. Anat. **24**: 1, 1913. See also Anitschkow's review in Cowdry.[5]

10. Leary, Timothy: Experimental Atherosclerosis in the Rabbit Compared with Human (Coronary) Atherosclerosis, Arch. Path. **17**: 455 (April) 1934.

the process might account for the imbibition. Warren [11] suggests that the high sugar concentration and the great fluctuation in sugar concentration in the blood of persons with diabetes could possibly lead to swelling of the intimal ground substance through changes in osmotic pressure and thus favor lipoid imbibition. Nuzum and his associates [12] stressed the possible importance of high protein diets in favoring intimal damage. The most striking evidence indicates that high blood cholesterol is the standard factor from the dietary standpoint in the causation of atherosclerosis.

The importance of stresses in leading to the selective localization of atherosclerotic lesions in the aorta has been much discussed. The favorite site of the process over the posterior wall about the lines of the intercostal orifices is in the most firmly anchored portion of the vessel. The selection of sites about the orifices of aortic branches can be explained as the result of variation of stresses as the contracting and dilating waves of the free wall come up against the obstructions that arise at the orifices. The relative freedom of the ascending arch from lesions is discussed later in the paper. In general the close relation between hypertension and arteriosclerosis emphasizes the importance of stresses. Based on this connection and the deduction that unusual stresses must occur in the coronary arteries in congenital heart disease, an examination was made of the left coronary arteries in eight such hearts, which disclosed atherosclerotic lesions in five of them.

The Phagocytic Cells.—The next question is the source of the phagocytic cells that take up the lipoid. They may be monocytes from the blood. They are not histiocytes that wander in from neighboring tissues, because evidence of such invasion is lacking. I am inclined to believe with Klotz and Manning [13] that they originate from the subendothelial connective tissue. In experimental cholesterol lesions a marked proliferation of this tissue sometimes occurs at sites where lipoid infiltration is beginning.

The phagocytic cells found in atherosclerosis show in the human being little tendency to wander beyond the limits of the vessel. In the experimental rabbit under acute massive dosage, extension through the wall is common in the smaller vessels. The perivascular lymphatics may be crowded with the cells, and the regional lymph nodes may contain them. Blood distribution probably also occurs, since the cells are found in numbers in blood vessels, notably in the spleen, in the experimental animal.

The studies of Opie [14] and others have demonstrated the presence in the mononuclear exudative cells of a proteolytic enzyme, which is most efficient in an acid medium, unlike the enzyme of polymorphonuclear leukocytes, the greatest activity of which is shown in a neutral or slightly alkaline medium. In addition, an erepsin-like enzyme is found in leukocytic exudates, which splits proteoses and peptone into amino acids and tryptophan. Mudd [15] and others in a review of phagocytosis deplore the lack of studies on intracellular lipoid activities. The extensive studies on the Niemann-Pick, Gaucher and Hand-Christian diseases are unsatisfactory in this respect.

The occurrence of cholesterase widely in the organs, tissues and fluids of man and animals and the finding of cholesterol crystals in relation to necrotic tissues and exudates bespeak the activity of such an ester splitting enzyme. Its function is limited to the hydrolysis of cholesterol esters in digestion and perhaps to their resynthesis.

Physical Characteristics of Cholesterol.—Cholesterol and certain of its compounds have physical characteristics that permit of tracing the substance to a degree in the tissues. In the ester form seen in the arteries, cholesterol occurs in drops which stain like fats with the sudans and which are anisotropic, the so-called fluid crystals of Lehmann. Under the polariscope they exhibit dark Maltese crosses, producing a tetrad-like appearance. The solid crystals, whether in the typical oblong plates with a notched corner or in needle forms of the esters are doubly refractive.

The cholesterol esters in the surface lipoid cells of aortic lesions are evidently in very unstable equilibrium, since in tissues fixed in solution of formaldehyde they precipitate, the crystalline masses distending and frequently rupturing the cells containing them. The precipitation of cholesterol in formaldehyde fixed tissue permits of a visualization of the massive content of the lipoid within these cells, particularly with polarized light. Freezing of fresh tissues may have the same effect as fixation in solution of formaldehyde, while heating of the sections may cause the crystals to disappear. On refreezing, however, the solid crystals again manifest themselves, though the total crystal deposit may not be reproduced except by freezing at very low temperatures. Staining with sudan tends to overcome anisotropism to a certain extent. Unstained sections should be studied for complete evidence of anisotropism.

Aortic Lesions.—(*a*) Youth: Whether the cholesterol is in solid or fluid crystal form, the globular cells showing marked anisotropism are limited to the surface subendothelial layer in the aortas of younger persons. Below this layer appear ameboid fat-containing cells, with branching processes, in a loose textured connective tissue arising from stimulation of the subendothelial layer. The fat in these deeper cells is present in drops, which are not in general anisotropic. Under the polariscope in unstained specimens some of these cells are seen to contain small anisotropic solid crystals, which tend to be smallest in the deepest cells. Many of the cells show no anisotropic substance even in the unstained section. This loss of anisotropism is associated with division of the enclosed fatty material into smaller and smaller droplets. In regions where the process shows further progression, cells occur in which the droplets are few in number and certain of them appear to have freed themselves completely from the engulfed lipoid. Finally, in adjacent areas where the cells have freed themselves of cholesterol the only material staining with sudan is in the finest conceivable form (Bloor's fat dust) in the wavy bundles of the intercellular fibrillae.

The amount of connective tissue produced may be small and no gross scarring results. However, I have never seen a lesion in which cholesterol esters were contained within lipoid cells in the young in which some connective tissue was not produced.

This is at variance with Aschoff's thesis that in youth lipoid deposits in the aorta are harmless and merely mechanical, the process being reversible and the lipoid

11. Warren, Shields: The Pathology of Diabetes Mellitus, Philadelphia, Lea & Febiger, 1930, p. 139.
12. Nuzum, F. R.; Seegal, Beatrice; Garland, Ruth, and Osborne, Margaret: Arteriosclerosis and Increased Blood Pressure: Experimental Production, Arch. Int. Med. **37**: 733 (June) 1926.
13. Klotz, O., and Manning, M. F.: J. Path. & Bact. **16**: 211, 1911.
14. Opie, E. L.: The Enzymes and Antienzymes of Inflammatory Exudate, J. Exper. Med. **7**: 316, 1905.
15. Mudd, S.; McCutcheon, M., and Lucke, Baldwin: Physiol. Rev. **14**: 210 (April) 1934.

disappearing without trace (atheromatosis). In the experimental animal, lipoid is deposited in the early stages in free form beneath the endothelium before phagocytosis occurs. In this state it is a bland substance awakening no activity in neighboring cells. In human lesions a similar deposit may occur not only beneath the endothelium but in deeper layers, even in the media. My observations, however, indicate that visible yellow lesions in the aorta at any young age are constantly associated with phagocytosis and stimulation of connective tissue growth.

In young persons a rather diffuse infiltration of the intima over large areas is often found in the form of a pale yellow deposit with pinpoint deeper yellow foci. Microscopically such a lesion shows focal collections of globular lipoid cells just beneath the endothelium forming the bright yellow points, and ameboid cells carrying lipoid distributed more widely through a loose textured connective tissue responsible for the diffuse pale yellow coloring.

(*b*) Adult Life: As one grows out of the period of youth, the metabolism of cholesterol within lipoid cells tends to grow less efficient. Though connective tissue growth is stimulated, the metabolism is often slowed, the connective tissue secretes collagen, and the lipoid cells are frequently hedged in by scar tissue. They lose their branching processes and become globular or flattened ovoid masses, retaining marked anisotropism, in the interstices of the scar tissue. The cells that have migrated most deeply, i. e., farthest away from the nutritive supply from the intima, tend to undergo necrosis, and the lipoid from many cells together with tissue fluids gives rise to one form of atheromatous "abscess" in which no living cells are found. These lie in the deep layers of the intima directly above the media.

Sections of atherosclerotic lesions in middle life reveal processes in which the color and consistence are dependent on the relative amounts of lipoid and scar tissue. The newest processes are bright yellow and rich in lipoid cells, largely at the surface; the older are paler yellow or white, depending on the amount of scarring. Evident lateral spreading from small unit lesions has produced large pale yellow raised foci, the long diameter of which corresponds to the long diameter of the vessel. The paler yellow lesions are relatively rich in lipoid cells with anisotropic contents, globular but fewer near or at the surface, with some evidence of the tendency to branching processes in the next deeper layer, and definite formation of older connective tissue, together with necrosis and mixed lipoids and fluid in the deepest layer. The whiter scarred foci show usually, even on gross section, a deeply placed yellow layer, which the surface scar tissue has obscured. Microscopically the scar tissue may still contain isolated ovoid or flattened lipoid cells in varying numbers. The deepest intimal layer, yellow as seen on gross section, is made up of a pasty mixture of lipoids and fluid or is a mass of necrotic tissue permeated with fat dust.

Rarely a pure healed scar is found, usually a survival from a more youthful period. Many of the grossly pale scars show on microscopic examination varying amounts of material staining with sudan IV in the depths.

(*c*) Old Age: In older persons the ability of the phagocytic cells to metabolize cholesterol grows less or disappears. As a result, lipoid cells the contents of which are strongly anisotropic become massed in the intima, with minimal reticular strands separating groups or single cells. New vessels are formed rarely if at all. Massive necrosis may occur associated with freeing of the cholesterol in crystalline form. The more soluble lipoids that assist in holding it in solution are presumably absorbed. Rupture of such atheromatous "abscesses" through the thin covering, made up of endothelium alone or with a small amount of connective tissue, is common. The cavity becomes filled with blood, the disintegration of which gives rise to pigment deposits. The delivery of the softened contents of an atheromatous "abscess" into the aortic blood stream occasions no serious consequences. The mass becomes finely divided and mixed with the blood. The persistence of the semifluid contents as a more or less coherent mass, capable of obstructing, is possible only in smaller vessels, such as the coronary arteries.

The Nutritive Factor.—There appears to be a close association between local nutrition and metabolic activity of lipoid cells. Even in individuals in the thirties, and sometimes at younger ages, a delay in freeing the tissues of cholesterol and the formation of surface scar tissue in the lesion will result in evidence of failing metabolism in the deep layers. In many advanced lesions with almost complete scarring the dense connective tissue in the depths of the lesion undergoes necrobiosis, becoming permeated with fat dust and larger fat globules. It is recognized that except when associated with syphilitic aortitis the arch of the aorta, particularly the ascending arch above the ring, tends to be much freer from atherosclerotic scars than the rest of the vessel. Yet early lipoid deposits in the form of small yellow mounds often occur in the arch, frequently in large groups. These lesions are cared for apparently by relatively rapid removal of the lipoid and minimal scarring, even in older individuals. Spreading of the lesion from these small yellow mounds to form larger foci, a common picture in the aorta elsewhere, is exceptional in the arch.

Calcification.—In atherosclerotic lesions calcification is always a late, one may say a terminal, process. It appears earlier in aortic than in coronary lesions in general. Unlike the calcification in Mönckeberg's sclerosis, which occurs without evidence of visible fat, atherosclerotic calcification tends to be intimately associated with lipoid. In some lesions with slow necrobiosis the deposit of lime salts appears to arise in relation to the breaking down of the nuclear protein of dying cells. In some of these cells, lipoid droplets and globules of calcium and fat can be found within the same cell body. In the deposit of calcium in regions of massive coagulation necrosis, usually in irregular "geographic" areas, globules with an affinity for acid dyes are found along the border of the lesion in the still living tissue, while in the necrotic region the similar globules have an affinity for basic dyes. Plaques and solid masses of calcic deposit appear to arise from the fusion of these globules into larger masses. The calcified plaques in the aorta tend to develop toward the surface and ultimately in many cases are separated from the lumen by a layer of endothelium with little or no connective tissue.

Vasa Vasorum.—The influence of the vasa vasorum in connection with the lesions of atherosclerosis is relatively unimportant. Even in comparatively large foci the nutrition seems to depend on imbibition through the endothelial layer. This probably in part accounts for the diminished efficiency of the handling of cholesterol

as the thickness of the lesion increases. In some of the older scarred lesions, notably about orifices of vessels, such as the intercostals, evidence of activity of the vasa vasorum is found, but always as a late phenomenon.

To recapitulate, the early lesions of arteriosclerosis are marked by (1) the phagocytosis of imbibed cholesterol esters by cells probably of local origin, (2) invasion of the deeper layers of the intima through ameboid activities of these cells, accompanied by (3) a loss of anisotropism of the contained cholesterol and (4) dividing of the lipoid into fine droplets, (5) stimulation of connective tissue growth and (6) disappearance of the lipoid with minimal scarring.

The close resemblance between this process, as seen in the young, i. e., the division of fatty material into finer and finer droplets followed by its disappearance, to the system of fat absorption in the intestine, and of fat injected into the transparent tadpole's tail, as observed by the Clarks,[16] is manifest.

A definite progression in the loss of anisotropism from the large globular surface cell, surcharged with anisotropic lipoid, can be followed through the upper layers of ameboid cells still containing anisotropic crystals to cells the contents of which reveal no anisotropism. The combined loss of anisotropism, division of the lipoid and its local disappearance furnish morphologic evidence of a cellular cholesterol metabolism that has been lacking up to now.

In the very old this process of cell metabolism is lost, lipoid cells do not become ameboid, and their contents do not lose their anisotropism and are not divided into fine droplets. Lipoid cells tend to occur in large masses, which undergo necrosis, freeing cholesterol crystals and forming atheromatous "abscesses."

In the middle period of life, lesions are found representing imperfect metabolism of the contained lipoid in recent lesions, with some formation of connective tissue, which tends to become scar tissue near the surface. There is less evident loss of anisotropism of the lipoid contained in the cells. In the depths of the lesion there is a marked tendency to form atheromatous "abscesses." In this and the older period, scarred and intermediate processes that have persisted through years are an important part of the picture, as are calcified plaques.

As we grow old our aortic linings come to be beset with scars, pits, mounds and calcified monuments marking the sites of unsuccessful local battles with cholesterol.

The aortic picture described is of course only a reflection of a general disturbance in cholesterol metabolism.

GENERAL DISTURBANCES IN CHOLESTEROL METABOLISM

The rabbit must possess a metabolic system to synthesize the cholesterol needed by its cells, since it ingests only plant sterols, which are not absorbable in most animals. This metabolic system is, however, evidently weak, just adequate to care for the animal's needs for the substance.

Atherosclerosis can be produced readily in the rabbit by overwhelming this weak metabolic system through feeding cholesterol. The same procedure, i. e., the overwhelming of the cholesterol metabolic system, was unintentionally carried out in human beings by the use of high fat diets in diabetes, in the decade 1920-1930, and the results were just as definite as those obtained in the experimental rabbit. It was reasoned that fat could be substituted for carbohydrates and thus spare the inefficient carbohydrate metabolism in diabetic patients. The reasoning was good. Unfortunately the simplest method of increasing fat was to add cream, butter and eggs, all wholesome foods but potent sources of cholesterol, to the dietary. The effects of the excessive cholesterol diet manifested themselves in an increase of arteriosclerosis, even in children, and xanthomas were more common in the skin. Shields Warren[11] said:

> Whether the increased prevalence of arteriosclerosis in diabetes is due to the disease itself or to methods of treatment of the disease, the importance of the problem is such that it cannot be disregarded. I have yet to see at autopsy a diabetic or to read the autopsy of a diabetic, whose disease has lasted five years or more, free from arteriosclerosis, regardless of age. . . . The diabetic has not only more than his share of arteriosclerosis, but it falls to his lot ten or twelve years earlier than to the non-diabetic.

White[17] records roentgen evidence of calcification of vessels of the legs in nineteen of 106 children, one at 4 years of age, two at 6, three at 7, one at 8, four at 9, two at 10, two at 11, two at 12, one at 13 and one at 14. Among these the daily diet included more than 100 Gm. of fat in all but two, and two received 150 Gm. daily.

The reverse of this picture, under low fat diets, is indicated by recent reports from the same clinic (Joslin) in which Warren's and White's observations were made. Roentgen shadows of calcified leg arteries in children are no longer obtainable, and xanthomas do not occur. Rabinowitch reports that already there is evidence of less atherosclerosis in adult diabetic patients in Montreal.

On all the evidence presented there can be little reasonable doubt that arteriosclerosis is a disease arising out of inadequacy of the cholesterol metabolism. Stresses are factors in the localization and progression of lesions. Other secondary factors may play a minor part.

CHOLESTEROL

As its name indicates, cholesterol is an alcohol, a hydro-aromatic secondary alcohol, but it possesses the power of uniting with fatty acids to form esters. It is one of the most complex substances occurring in the animal body. It is relatively insoluble, its best solvents being the fat solvents. It is highly resistant to the action of enzymes, whether of animal, vegetable or bacterial origin. Cholesterol is found in every animal cell. It and ergosterol (which is associated with it in minute amounts) are the only sterols found in animal bodies. It is isomeric with or closely allied to the plant sterols, some of which differ from it only in molecular arrangement. This difference appears to be the factor preventing the absorption of plant sterols, cholesterol (with ergosterol) being the only sterol which is absorbable.[18] In the animal body it is closely associated with the fats, being found in the unsaponifiable residue following extraction by fat solvents.

Recently much attention has been paid to the functions of cholesterol. Starling's[19] concept of its functions within the cell is as follows:

> In view of the great stability of this substance when exposed to the ordinary mechanisms of chemical change in the body, it seems probable that the part played by cholesterol is that of

16. Clark, E. R., and Clark, E. L.: Am. J. Anat. **21**: 421, 1917.

17. White, Priscilla: Diabetes in Childhood and Adolescence, Philadelphia, Lea & Febiger, 1932, p. 178.
18. Schoenheimer, Rudolf: Science **74**: 580, 1931.
19. Starling, E. H.: Principles of Physiology, Philadelphia, Lea & Febiger, 1930, p. 42.

a framework or skeleton, in the interstices of which the more labile constituents of the protoplasm undergo the cycle of changes which make up the phenomena of life.

Bills,[20] in a review of the physiology of the sterols, says:

> There are groups of physiologically important substances which are fundamentally sterols in structure, although they are generally classified according to their function. Among these are the bile acids and certain cardiac poisons, sex hormones, venoms and vitamins.

In digestion, cholesterol is believed to function as a conveyor in the absorption of fats. The white matter of the brain is rich in cholesterol, the organ containing about one ounce of the substance. Its function appears to be to serve as an insulating medium in the myelin sheaths. It forms 19 per cent of human skin fat. Cell membranes are believed to be rich in cholesterol and phosphatides, which control cellular permeability and membrane equilibrium. In this relation it is known that cholesterol is an active antihemolytic agent. It opposes the hemolytic action of saponin, solanin, cobra venom and tetanus toxin.[21] Sterols are present in seeds, pollen, spores, ova and sperms, suggesting some peculiar need for sterol by the developing embryo. The formation of cholesterol ester from free cholesterol in the third week of incubation of chick embryos, associated with calcification of the bones, has suggested that the phosphorus for calcification comes from the breaking down of lecithin, and the fatty acids thus liberated combine with the cholesterol. Cholesterol has been shown to oppose flocculation within the blood stream, which, according to Lumière's theory, is the cause of anaphylactic shock.

A large part of the adrenal lipoids is made up of cholesterol compounds. When the adrenal cortex is robbed of its fats in fatal toxic or septic conditions, the anisotropic lipoids seem to be lost to a greater extent than the isotropic fats. Cholesterol, independently of ergosterol, contains provitamin D, susceptible of irradiation. The sex hormones, according to the formulas of Butenandt and others,[22] are related to and probably derived from sterols. Ruzicka and others[23] have succeeded in producing androsteron, the testis hormone of Butenandt, from cholesterol. Recent work by Dodds and Cook[24] indicates the close relationship chemically between the sex hormones and certain carcinogenic hydrocarbons, which are also degradation products of sterols. Campbell,[25] discussing the apparent immunity to cancer in mice produced by placental and embryonic skin extracts, said:

> If oestrin (the female sex hormone) is responsible, directly or indirectly, for production of natural immunity, we should expect cancer to be most prevalent when the production of oestrin ceases. This is the case, at any rate, in the female, since cancer is most prevalent after the menopause.

Though knowledge of the sterols is still limited, it is rapidly growing under the stimulation of new evidence of the relation of these substances to human life and disease. From every point of view, cholesterol is one of the most important substances present in the body.

20. Bills, C. E.: Physiol. Rev. **15**: 1, 1935.
21. Abderhalden, Emil, and LeCount, E. R.: Ztschr. f. exper. Path. u. Therap. **2**: 199, 1906.
22. Butenandt, A., and Tscherning, K.: Ztschr. f. physiol. Chem. **229**: 167 and 185, 1934. Butenandt, A., and Dannenbaum, H., ibid. **229**: 192, 1934.
23. Ruzicka, Goldberg, Meyer, Brungger and Eichenberger: Helvet. chim. acta **17**: 1389 and 1395, 1934.
24. Dodds, E. C., and Cook, J. W.: Ann. Rep. Brit. Emp. Cancer Campaign **11**: 12, 1934.
25. Campbell, J. A.: Nature **135**: 395, 1935.

Knowledge of cholesterol metabolism within the human body is limited. Because the material tends to be stored, doubt has been thrown on the results of dietary studies of human ingestion and excretion of the substance, the possible stored cholesterol being an unknown quantity. Schoenheimer and Breusch[26] ingeniously overcame this difficulty in estimating the powers of mammals to metabolize cholesterol, by using mice, whose whole bodies could be analyzed. Their results indicate that the mouse can synthesize cholesterol on a cholesterol free diet. On a diet containing moderate amounts of cholesterol, less was synthesized. When large amounts of cholesterol were fed, a considerable part was destroyed. The disappearance of intimal deposits of cholesterol from the aorta of young adults during the period of fat famine in Germany following the war suggests that the human cholesterol metabolism may have reserve powers in times of need.

That man can synthesize cholesterol is probable. The indications are that he does not, all of the cholesterol which he needs being ingested. Milk, eggs and pork fats are the important sources in human diet. The presence of cholesterol in large amounts in seeds, pollen, ova and spores has been referred to as indicating special needs of the embryo for this substance. Egg yolk, which is rich in cholesterol, is intended for the embryo. Milk is intended for the infant. Man is the only animal that ingests eggs and milk during a lifetime. Man is also the only animal that dies in early life from coronary sclerosis and acquires atherosclerosis almost universally in advanced life. It is interesting to note that man's closest rivals in this respect are the birds, as shown in Fox's[27] valuable studies of the disease in lower animals and birds. Birds, particularly domestic fowls, must possess remarkable powers to metabolize and presumably to synthesize cholesterol. The amount contained in the yolk of hen's eggs, almost daily produced, is very great. Perversions of this metabolic system might well account for this rather deadly form of rivalry of the bird with man.

ATHEROSCLEROSIS A METABOLIC DISEASE

As one studies atherosclerosis, one is impressed by its general resemblance to the other metabolic diseases, and particularly to diabetes. As in diabetes, marked variations in susceptibility are evident in the experimental animal and seem to exist in man. As in diabetes, the inheritance of a weak cholesterol metabolism appears to lead to early death from coronary sclerosis. There are families in which coronary disease is the standard form of death. As in diabetes, advancing age with growing inefficiency of the cholesterol metabolism is associated with more frequent manifestations of the disease. The ability to prevent cholesterol deposit or to diminish the amount of atherosclerosis produced in cholesterol fed rabbits by the use of thyroid extracts[28] suggests the relation of cholesterol metabolism to this internal secretion. Finally, a familial inheritance which seems to be dependent on a general inferiority of the metabolic systems may manifest itself in individuals of such a family in the form of diabetes, obesity, arteriosclerosis, gout or combinations of these.

This discussion of atherosclerosis, dealing as it does with the harmful effects of cholesterol overdosage, can-

26. Schoenheimer, R., and Breusch, F.: J. Biol. Chem. **103**: 439 (Dec.) 1933.
27. Fox, H., in Cowdry.[5]
28. Turner, K. B.: J. Exper. Med. **58**: 115 (July) 1933.

not be closed without calling to attention the fact that cholesterol is an important food substance, as necessary as the carbohydrates, fats, proteins and mineral elements of the dietary. All the cholesterol needed by the cells of the human body is ingested. Milk and eggs are wholesome foods to which the human race is accustomed and which are necessary sources of cholesterol. As one advances in years, the needs for this substance appear to grow less. In general, apart from susceptibles, it is the abuse, the overeating of these foods, as is true in the case of other food substances, that is likely to produce disease.

784 Massachusetts Avenue.

ALLERGY AND CATARACTS

RUBY K. DANIEL, M.D.
Fellow in Ophthalmology, the Mayo Foundation
ROCHESTER, MINN.

The term "allergy" means a condition of unusual or exaggerated specific hypersensitivity to a substance which, under like conditions and in similar amounts, is harmless for the large majority of members of the same species. Allergic diseases are divided by Coca [1] into these four classifications: "(1) atopy (hay fever, asthma, eczema group), (2) contact dermatitis, (3) serum allergy, and (4) drug allergy." More than one type may be present in the same individual as well as among members of his family.

Bray [2] has diagramed the integral factors producing the allergic state and listed the methods of entry of the specific antigens, allergens or causative agents by the following routes: "(1) inhalation, (2) ingestion, (3) injection, (4) infection and (5) contact." Catalyzing nonspecific factors, he stated further, are "(1) dietary, (2) environmental, (3) nasal, (4) toxic, (5) psychic, (6) endocrine, (7) physical, (8) chemical and (9) mechanical." Hereditary predisposition or damage to tissue or both are the rule, although occasionally an acquired predisposition must be admitted. If both parents happen to be allergic, the majority of the offspring will show some manifestations of hypersensitiveness, and it is likely to appear at an earlier age than in the parents.

From 1 to 5 per cent of human beings are spontaneously allergic in some way, and their reaction largely occurs in the skin and in the conjunctival, respiratory and gastro-intestinal tissues, which of course are the principal coverings of the exposed surface of the body. This hypersensitiveness ranges from a mild reaction, which may go unnoticed for a long time, to such a severe reaction that it threatens life. Fortunately the vital centers are rarely influenced to extreme degrees. However, further studies have indicated a much wider involvement than was first recognized. Allergic migraine is only one instance of such deduction with evidence for its substantiation.

The endocrine system frequently plays a definite rôle in the symptomatology, and epinephrine, thyroid, parathyroid and pituitary extracts have been of value in the treatment in special cases. The sympathetic nervous system largely activates this group of glands, and hence it is difficult to know whether these glands influence the nerves or the nerves alter the secretion of the glands in this particular link of the chain. Perhaps the answer to the problem of allergy is to be found in physiobiochemical equilibrium.

It has long been observed that conjunctival hypersensitivity is not an uncommon finding among patients who have the allergic manifestation of asthma, hay fever or vasomotor rhinitis. Vernal catarrh is classed in the allergic group of reactions and has a high incidence of accompanying allergic phenomena.

Wesseley in 1911 called attention to the fact that keratitis in certain forms can be an allergic manifestation. Episcleral, scleral and uveal changes have been reported to be allergic. The crystalline lens is not exempt from the influence of allergens, which may be causing changes in other tissues of ectodermal origin. The ectodermal epithelium of the ciliary body is responsible for the formation of the aqueous fluid, which in turn nourishes the lens and carries away the waste products. A fine change in the function of these epithelial cells of the ciliary body, in the content of the aqueous fluid or in the level of permeability and selectivity of the capsule of the lens can readily be reasoned to interfere with the efficient metabolism of the lens and its transparency, thereby producing a cataract in an otherwise normal eye.

In 1868 Rothmund [3] reported the occurrence of cataracts in connection with changes in the skin. Andogsky,[3] a Russian ophthalmologist, used the term "cataracta dermatogenes" to classify a case in which a youth had bilateral cataracts and a simultaneous skin eruption; he felt that these conditions had a common underlying factor. Löwenstein,[3] Gault [4] and others found a number of cases of bilateral cataract associated with neurodermatitis. Kurz [3] reported a case in which opacities of both lenses, associated with eczema, occurred in a person aged 21. Davis [3] reported the case of a girl, aged 15 years, who had ezcema and bilateral cataract. These as well as the other opacities reported occurred in previously normal eyes. The form of opacification largely resembled the anterior stellate cataract, proceeding from the capsule of the lens without further changes in the eye. These cataracts were always bilateral and occurred principally in the young adult as a rather significant accompaniment of changes in the lens and skin. The common origin of the epithelium of the skin and the epithelium of the lens was thought by Davis to correlate the phenomena, and attempts were made to explain the changes on a basis of the endocrine glands, sympathetic nervous system and calcium level, and in numerous other ways. That there is an element of endocrine function involved is often obvious, but as to the evaluation of each particular gland as a causative factor or catalyzing agent, much remains to be proved.

REPORT OF CASES

CASE 1.—A girl, aged 17 years, admitted to the Mayo Clinic Nov. 9, 1934, complained of extensive atopic eczema and marked decrease in vision due to rapidly developing cataracts. The family history was significant from an allergic standpoint. The mother had suffered from hay fever, the father had had vasomotor rhinitis, a maternal uncle had had fever, and a grandmother had had eczema of the skin of the hands.

Involvement of the patient's skin had first occurred in the form of a mild flexural eczema at the age of 18 months. When

---

Read before the Section on Ophthalmology at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 13, 1935.

1. Coca, A. F.: Hypersensitiveness, in Tice, Frederick: Practice of Medicine, Hagerstown, Md., W. F. Prior Company, Inc. **1**: 107-171, 1923.
2. Bray, G. W.: Recent Advances in Allergy, ed. 2, Philadelphia, P. Blakiston's Son & Co., 1934.
3. Cited by Ollendorff, Hans, and Levy, Georg: Neurodermitis und Katarakt, Arch. f. Dermat. u. Syph. **164**: 683-688, 1932.
4. Gault, Nancy: Cataracte névrodermitique, Bull. Soc. d'opht. de Paris, March 1933, pp. 280-284.

she was 4 years old she had handled a dyed Easter egg, and immediately following this she had had marked dermatitis and a "gelatinous-appearing" edema of the bulbar conjunctiva of both eyes. From the age of 1 to 7 years treatment had been necessary for recurring bronchitis, and from the age of 6 to 13 years she had had frequent though mild attacks of urticaria.

At the onset of menstruation, when the patient was 13 years of age, there had been an extensive exacerbation of the lichenified eruption over a much greater area than had previously been involved. Eighteen months later she had observed dimness of the vision of the left eye, and four months later she had noted a gradual but similar decrease in the vision of the right eye. Examinations had revealed bilateral immature cataract. In a year these cataracts had developed, and vision had been reduced to such an extent that she was only able to count fingers with her right eye and to distinguish movements of objects with her left eye. Extensive skin manifestations and allergic rhinitis had continued, with brief remissions and longer exacerbations depending largely on the exposure to the many articles of food and environmental factors to which she was sensitive. Eggs, milk, house dust, ragweed, corn pollen, cottonwood, silks and dyes seemed to cause the most marked reactions. Basal metabolism at one time had been recorded as — 18. Thyroid extract had been given, without benefit, and it had been discontinued when it had seemed to increase her "nervousness."

On examination at the clinic the patient appeared well nourished and was of normal physical development. She had bilateral mature cataracts, allergic rhinitis, and extensive hyperpigmented, red, lichenified, atopic eczema over the body, face and arms. Vision was limited to ability to see moving objects with the right eye and to see light with the left. The skin of the lids, which corresponded closely to that of the face, was thick and leathery and was bordered by broken, stubby cilia. The palpebral conjunctiva appeared thickened but otherwise normal. The corneas were clear, the anterior chambers were normal, and the pupils were round and equal and reacted well to light. The irises were normal. Both lenses had a homogeneous grayish white appearance that obstructed all view of the fundi. Transillumination of the globes was uniform.

CASE 2.—A girl, aged 17 years, admitted to the clinic Feb. 25, 1935, complained of marked recurrent eczema. She said that her mother had had hives and had been subject to a migrainous type of headache. Since the age of 2 months the patient had suffered from a mild flexural recurrent eczema. At the age of 11 years the first marked exacerbation had occurred and asthma had developed. One and a half years prior to her admission to the clinic the eczema had became generalized and the eyelashes and eyebrows had broken off, leaving them stubby. Exposure to silk, animal hair or eggs seemed to cause the most severe reactions.

Physical examination revealed an extensive, hyperpigmented, red, lichenified eczema on the arms and legs, body and face. This case was recognized as closely resembling case 1, both as to the age, sex and history of the patient and as to the manifestations. The patient was sent for a slit lamp study of the lenses, although there were no eye complaints. Previous examinations of the fundi and retinas had been negative, with the exception of a slight astigmatic error. Vision was 6/6 in each eye. The broken-off cilia and brows were noted as well as the thick leathery scaling skin of the lids, which corresponded to that of the rest of the face. The conjunctiva appeared normal. Examination of the globes externally and of the fundi gave entirely negative results except for a faint, grayish, veil-like, anterior, central and cortical opacity in the right lens.

Two and a half months later, during which time, incidentally, the patient had suffered acute exacerbations of the allergic manifestations, there was observed a slight but definite increase in the opacity, and a faint brownish tint appeared instead of the grayish tint that had first been noted. The margins of the opacity were changed in shape and the points extended out as limbs or dendrites, showing an actual progression.

Skin reactions of both this patient and of patient 1 were markedly positive to their respective known allergens, as were also the reactions in normal individuals used for passive transfers.

CASE 3.—A man, aged 35, admitted to the clinic Oct. 27, 1934, complained of recurrent eczema of the face and hands and gradually decreasing vision in each eye.

Five years previously the patient had noticed for the first time a small, localized skin eruption in the right temporal region. This patch of scaling, redness and itching had been intermittent. Approximately two years later a symmetrical and similar eczema-like patch had been present intermittently in the left temporal region. One year prior to his admission to the clinic and following a change of residence a severe flare up of this same type of dermatitis had recurred after he had eaten shrimps, and on this occasion it had involved the entire skin of the face. This eruption had been characterized by blisters, small fissures, excoriation and a moist watery exudation and had lasted over a period of two months. Following this a slight but definite decrease in vision had been noticed in each eye. The patient had consulted an ophthalmologist, who had made a diagnosis of bilateral cataract. Examinations of the eyes prior to this time had been entirely negative.

On examination at the clinic the patient appeared well nourished. Eczematous dermatitis was present on the face and neck, and there were small patches of excoriations over the trunk, back and buttocks. The skin of the hands and face, including the eyelids, was excoriated, dry and scaling, thickened and leathery. Skin tests confirmed the allergic reactions to shrimp and nickel. The lashes and brows were broken off and stubby.

Vision in the right eye was 6/20 and in the left eye 6/15. With refractive correction the vision in each eye was improved to 6/12. The palpebral conjunctiva appeared thickened but otherwise normal. The bulbar conjunctiva was normal and the cornea clear. The anterior chambers were normal and the irises normal. The pupils did not react well to light (the patient had been instilling a 2 per cent solution of homatropine once daily to facilitate vision). Each lens showed a small, gray, central, oval, elevated plaque in the capsular region, measuring 3.25 by 2 mm. in the right eye and 1.15 by 2 mm. in the left eye. With the slit lamp, the cortex and nucleus appeared clear. The posterior capsular region appeared to have a similar process. The fundi were normal.

CONCLUSIONS

The three cases here reported not only fall into the group "opacification of the lens in young adults accompanied by skin manifestations" but further, by virtue of the history and the positive allergic reactions observed, could also justify the term "allergic cataracts," or, perhaps more correctly speaking, they should be called "cataracts associated with allergy."

ABSTRACT OF DISCUSSION

DR. ALAN C. WOODS, Baltimore: The cases presented by Dr. Daniel bring up in a somewhat different light the question of the relationship of the permeability of the lens capsule to cataract. While this syndrome of allergic cutaneous disorders with cataract has been reported previously, and three cases have been presented by Dr. Daniel, I myself have never seen patients with this particular syndrome. The report on these three patients is barren of laboratory investigations other than the evidence of skin hypersensitivity, and there is no positive evidence on which even a fragile theory may be based. Nevertheless, these cases are highly suggestive. Dr. Daniel's theory appears to be that a fine change in the function of the epithelial cells of the ciliary body, in the content of the aqueous fluid or in the level of permeability and selectivity of the capsule of the lens can readily be reasoned to interfere with the efficient metabolism of the lens and its transparency, thereby producing a cataract in the otherwise normal individual. The first two suggestions are meaningless to me in relation to allergy. While it is quite possible that allergic reactions in the ectodermal tissues as a whole might readily produce changes in the ciliary epithelium and the contents of the aqueous, I am unaware of any evidence that such changes do occur, and I find it difficult to construct any theory explain-

ing cataracts on such speculative changes. As regards changes in the capsule of the lens, however, one may be more hopeful of building up some theory of causal relationship between the existing allergy and the cataracts. Primarily, the capsule of the lens has been shown to be impermeable to the globulin fraction of the serum or aqueous—the portion that probably contains antibodies. Even if one presupposes the presence of specific cytolysins in the aqueous, there is no reason to believe that such cytolysins could pass the capsule barrier and attack the lens substance. If one regards the situation somewhat differently and assumes that the capsule of the lens, an ectodermal structure, participates in the general cutaneous allergic reaction, it might readily follow that the permeability of the reacting capsule may be altered. Thus the capsule might become permeable to the normal aqueous and this aqueous filtering through the altered capsule might produce precipitation of the lens protein and cataract formation. Such a mechanism would really be that of a traumatic cataract, allergy to the lens capsule being the traumatizing factor. However, there are obvious difficulties to even such a theory. While it may reasonably be assumed that the capsule of the lens may participate in a general hypersensitivity of the ectodermal tissues to a specific allergin, it is difficult to explain how the intoxicating allergin obtains access to the capsule. Allergy is, after all, the local reaction of sensitized tissues to the specific allergin and may be produced by any of the various methods which Dr. Daniel has enumerated. In this instance the most obvious explanation would be that the aqueous contains the specific allergin. It would be most interesting to obtain the aqueous from the eyes of the patients seen by Dr. Daniel and to use this aqueous in a skin test on the same patients.

DR. DERRICK T. VAIL JR., Cincinnati: Dr. Daniel's paper appears to be the second discussion in the English language of a peculiar form of cataract (and one which appears to be pathognomonic) associated with atopic eczema or neurodermatitis. The first was by Dr. W. T. Davis in 1921. The disease association has been well established by several observers and, I suppose, could be called a syndrome. In bringing this condition to notice, it would have been better and less spectacular if Dr. Daniel had used the term "eczema cataract" or "neurodermatitis cataract," since the dermatologists themselves have not agreed entirely, as yet, on the allergic basis of eczema. The rôle of the endocrine glands has not been eliminated from the picture of neurodermatitis. Ollendorf and Levy found from an analysis of the literature that a disturbance of the endocrine glands was present in 20 per cent of the cases of neurodermatitis. They differentiate late exudative eczematoid, disseminate neurodermite or atopic dermatitis from contact dermatitis or eczema. Löwenstein, Kraus, Kurz, Bothmund, Andogsky and Vogt found definite endocrine disturbances in their cases of neurodermitis and cataract. Dermatologists are at variance with one another regarding the allergic etiology of neurodermitis. Taub and Zakon, for example, state that nearly all patients give a positive allergic history. On the other hand, Wise and Sulzberger, while finding forty-two positive urticarial reactions in eighty-six cases, concluded that there are, nevertheless, grounds for doubting the importance of allergens for the etiology of neurodermatitis and of eczema in children. The definite thing known, then, is that there is a rare, peculiar form of cataract associated with a skin disease called neurodermatitis. Therefore, in the present rather chaotic state of knowledge regarding neurodermatitis it seems best not to put the blame for the cataract on "overworked" allergy. Since neurodermatitis is such a complex disease, one could assume that the cataract was of metabolic origin because of endocrine dysfunction, or avitaminotic because of faulty absorption, or chemical because of blood calcium disturbance, as easily as of allergic origin. Finally, the enormous number of allergic people, especially the eczematous young adults, may be considered, and these few case reports of cataract compared with them. The "missing link" is still missing in this disease.

DR. W. R. BUFFINGTON, New Orleans: Delicate tissues are often profoundly influenced by all forms of intensive light therapy. During the past year I saw lenticular changes known as irradiating cataract in two cases result from intensive ultraviolet radiation given over a period of time for external ocular lesions. One of the patients in Dr. Daniel's series—a Mr. F. A. R. of Baton Rouge, La., was examined by me in October 1934. This was some time before he came under Dr. Daniel's observation. His history shows that for at least two years previous to January 1934 he had suffered from a severe dermatitis, which affected the face and neck. The diagnosis was an allergic manifestation of unknown origin. The lesion had resisted all medication. Finally, during the months of January and February 1934, the history continues, he was given intensive ultraviolet treatment about the face and neck, in the hope to relieve his discomfort. Although the disease had existed for a long time, no disturbance of vision was ever experienced previous to this treatment. A few weeks subsequent thereto the patient's vision commenced to blur, so that by August 1934 it became necessary to dilate his pupils to improve vision in order that he might continue in his occupation. It was found that his poor vision was due to lenticular changes confined for the most part to the central area of the anterior capsule of each lens. Slit light examination showed them to be dense elevated opaque plaques, most likely a result of proliferating anterior epithelial cells. Careful observers have noted that this type of cataract often follows various forms of intensive light therapy; hence the term irradiation cataract. In this case the history and the observed facts cast a shadow of doubt on the theory that the lenticular changes are an allergic manifestation.

DR. C. ULYSSES MOORE, Portland, Ore.: From 1918 to 1928, recurring attacks of corneal ulcers in my right eye were treated by some of the best known American ophthalmologists. Some searched diligently for syphilis and tuberculosis. Being disappointed there, two recommended the removal of the offending eye. None of these learned men ever mentioned allergy as a possible cause of my trouble. An allergic minded pediatrician, however, solved the riddle through the making of scratch tests for some 200 foods. But for those tests I might now or soon be a candidate for a cataract operation, as my father was at 60. My family history shows none of the classic signs of allergy, such as asthma, hay fever, urticaria, eczema, headaches or colitis. But the food tests proved me mildly sensitive to more than a score of foods. I liked and still do tuna fish and beef steak, but a serving of either will make me prematurely tired and irritable. The following day I am likely to have a conjunctivitis. If I continue to eat offending foods for three days, a new corneal ulcer will probably develop. During the ten years from 1918 to 1928, more than 20 per cent of my time was lost because of an undiagnosed allergic eye. During the past seven years only a few days have been lost. These were primarily to demonstrate to doubting Thomases four different times that in my case tuna fish produces conjunctivitis, while halibut brings a speedy cure. If a committee of this group wishes to use me for additional clinical proof I shall, for the sake of other sufferers, consent.

DR. RUBY KATHRYN DANIEL, Rochester, Minn.: I have tried to use terms as simple as possible, because, in the study of the literature on "allergy," many terms encountered are confusing, and some are used with a wide variety of meanings. I believe that this fact accounts for much conflict of opinion. One should appreciate fully and accurately the interpretation of such basic terms as allergy and immunity; these words cannot correctly be used interchangeably. This study does not propose to include laboratory work on the intra-ocular tissues of these allergic individuals; it is based on clinical deductions. However, laboratory animals have given evidence that the eye does participate in a general hypersensitivity. Burky observed that anaphylactic antibodies in the aqueous were increased apparently somewhat proportionally to the hypersensitivity of the skin in his allergic animals. Furthermore, one should not use the words atopic eczema and neurodermatitis interchangeably. For instance, in case 1 the first flare up at the age of 4, after handling a dyed easter egg, can be explained on a basis of atopic eczema, a reaction markedly allergic in nature; but this would not fall into the classification of neurodermatitis in the strict sense of the word. In this paper I simply intended to report the cases of three young adults who have marked allergic reactions, who, further, have cataracts which seemingly have a significant onset and progress, and to suggest a possibility that in these patients these two may be related.

HYPERGLYCEMIA

EVALUATION IN THE TREATMENT OF DIABETES MELLITUS

HERMAN O. MOSENTHAL, M.D.
NEW YORK

The control of the blood sugar level in diabetes has been largely influenced by the impression that, since the so-called normal blood sugar concentration in healthy human beings is between 100 and 140 mg. per hundred cubic centimeters, this is the optimal blood sugar level and should be striven for in the management of diabetes. The significance of hyperglycemia in the treatment of diabetes may be considered under four headings:

1. The renal threshold to dextrose.
2. The normal blood sugar level.
3. A high blood sugar level without glycosuria.
4. A high blood sugar level with glycosuria.

RENAL THRESHOLD TO DEXTROSE

The researches of A. N. Richards and his collaborators have established that urine originates by filtration from the blood through the glomerular membrane of the kidney, that this filtrate contains dextrose in the same concentration as the blood and that the dextrose in the glomerular filtrate is reabsorbed in the renal tubules, resulting in a bladder urine free from sugar in the clinical sense (fig. 1). When the blood sugar rises as high as 170 mg. per hundred cubic centimeters, the dextrose is not all taken up in the tubules and glycosuria results (fig. 1).

Renal Glycosuria.—The occurrence of glycosuria while the blood sugar concentration is normal—that is, 140 mg. or less—is known as renal glycosuria. It is evident that this condition is not the same as diabetes, since in diabetes there is a diminished ability to utilize sugar within the body, while in renal glycosuria this does not hold true. The small amounts of sugar eliminated in the urine in renal glycosuria, even over a period of many years, do no harm and do not result in the complications seen in diabetes with the urinary excretion of large amounts of sugar. The importance of this fact will become clear further on when the control of hyperglycemia and glycosuria will be considered.

High Renal Threshold to Dextrose.—The failure of sugar to appear in the urine when the blood sugar rises above 170 mg. is regarded as due to a high renal threshold. This is mentioned here because in accounting for hyperglycemia in the absence of glycosuria it is frequently stated that this is an indication of decreased kidney permeability pointing to nephritis; this is incorrect, since a high renal threshold to dextrose is not due to diminished renal function but rather to hyperactivity on the part of the tubules. In fact there are many cases of acute and chronic nephritis in which there is renal glycosuria, that is, a lowered kidney threshold to dextrose, which might well be considered an impairment of tubular function.

NORMAL BLOOD SUGAR LEVEL

A normal blood sugar level is indicative of a perfect control in diabetes. If it is achieved by undernutrition, it is obvious that it is unwarranted. Malnutrition in diabetes may be justly regarded as one of the contributing causes for the development of diabetic arteriosclerosis and is a factor in the production of the complex syndrome of diabetic coma as shown by Peters, Kydd and Eisenman.[1]

With the aid of insulin, malnutrition can readily be prevented but the possibility of partial starvation in diabetes is often overlooked both by the physician and by the patient, in an effort to avoid insulin, while conforming to the other standards of ideal therapy; that is, a normal blood sugar level and a urine free from sugar.

HIGH BLOOD SUGAR WITHOUT GLYCOSURIA

A high blood sugar without glycosuria is often observed in diabetic patients and others, especially in older persons. While sugar usually appears in the urine when the blood sugar reaches a level of 170 mg. per hundred cubic centimeters, there are very many exceptions to this rule; blood sugars of 200 and 300 mg. and sometimes higher are frequently found without demonstrable glycosuria. From what has been said in the section on renal threshold to dextrose, it is evident that the reason for this is not a lowering of the kidney's excretory power but an acceleration of the process of reabsorption from the glomerular filtrate by the tubular membranes.

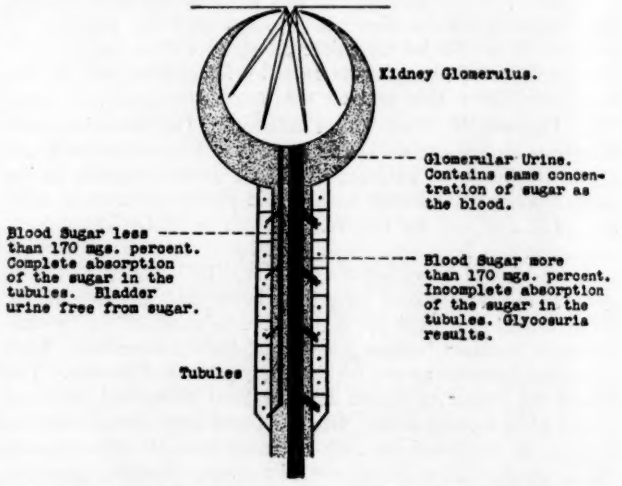

Kidney Glomerulus.
Glomerular Urine. Contains same concentration of sugar as the blood.
Blood Sugar less than 170 mgs. percent. Complete absorption of the sugar in the tubules. Bladder urine free from sugar.
Blood Sugar more than 170 mgs. percent. Incomplete absorption of the sugar in the tubules. Glycosuria results.
Tubules

Fig. 1.—Renal threshold to dextrose. The production of renal glycosuria or a high renal threshold may be readily visualized from this diagram.

Hyperglycemia, according to the available evidence, does not damage the tissues. In a study of the effect of changes in medium on lens epithelium cultures, Kirby, Estey and Wiener[2] noted no real difference in growth with dextrose concentration as high as 478 mg. of dextrose per hundred cubic centimeters of medium, and it was only when the concentration was 578 mg. that there was a slight inhibition of growth. Dr. Alexis Carrel[3] fails to find any interference with tissue growth in mediums containing 300 mg. of dextrose per hundred cubic centimeters and has not tried higher concentrations. Warren[4] says: "A high blood sugar level is not in itself injurious to the heart muscle."

In regard to the relation of bacterial growth to the concentration of sugar as it occurs in the blood of diabetic patients without complicating acidosis or glyco-

Read before the Section on Pharmacology and Therapeutics at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 13, 1935.

1. Peters, J. P.; Kydd, D. M., and Eisenman, Anna J.: Serum Proteins in Diabetic Acidosis, J. Clin. Investigation **12**: 355 (March) 1933.
2. Kirby, D. B.; Estey, Keith, and Wiener, R. von E.: A Study of the Effect of Changes in Medium on Lens Epithelium Cultures, Tr. Am. Acad. Ophth. **37**: 196, 1932.
3. Carrel, Alexis: Personal communication to the author.
4. Warren, Shields: The Pathology of Diabetes Mellitus, Philadelphia, Lea & Febiger, 1930, p. 153.

suria, all the observations point to the conclusion that concentrations of sugar in the hyperglycemic range do not favor bacterial growth. Hirsch-Kauffmann and Heimann-Trosien [5] failed to demonstrate an acceleration of bacterial growth in the blood of diabetic patients containing as high as 410 mg. of dextrose per hundred cubic centimeters, or when the blood sugar previous to the use of the blood as a culture medium was raised by infusion from 70 to 239 mg. per hundred cubic centimeters, or when dextrose was added to normal blood, raising the sugar to 600 mg. per hundred cubic centimeters; on the other hand, blood from children in diabetic coma did promote bacterial growth, but after recovery from coma the blood of these patients did not favor bacterial growth. Handsmann [6] found that blood with dextrose concentration as high as 1 per cent was no better as a nutrient medium in vitro for staphylococci than normal blood, and also that the addition of dextrose to blood does not diminish its bactericidal power against the staphylococcus. In the preinsulin period some of us were systematically giving diabetic patients suffering with infections, usually skin abscesses or carbuncles, as much nourishment as possible, especially proteins, with the idea that, if the urine was sugar free and dehydration compensated for, the hyperglycemia was of no great importance; such diabetic patients recovered very well from their infections.

Hyperglycemia apparently furnishes a stimulus for the effective assimilation of sugar. Cori,[7] in a review on carbohydrate metabolism, makes it clear that a high blood sugar promotes the formation of glycogen in the liver and he comments on the possible beneficial effects of a high blood sugar in diabetes as follows: "Lesser, puzzling over the fact that hypoglycemic symptoms appear at such a high blood sugar level in diabetic dogs, offered the interesting suggestion that in diabetes a high blood sugar level is necessary for any sugar to be utilized in the tissue."

Hyperglycemia is necessary for the utilization of dextrose in many diabetic patients. The conclusions of Soskin, Katz, Strouse and Rubinfeld [8] are particularly interesting in this regard, as they showed that in elderly diabetic patients with cardiovascular disease the same symptoms that occur after insulin administration could be induced with a low carbohydrate diet. They found that serious cardiac manifestations such as paroxysmal auricular fibrillation, intraventricular block and angina pectoris, besides the usual symptoms of hypoglycemic shock, will in some persons follow the lowering of the blood sugar below their accustomed hyperglycemia to concentrations accepted as normal.

A high blood sugar is evidently necessary for an initiation of the processes of carbohydrate utilization in many individuals who do not have diabetes. This has been noted in the interpretation of sugar tolerance tests. The highest normal blood sugar that usually occurs after the taking of 100 Gm. of dextrose is accepted as 160 mg. per hundred cubic centimeters; there are many instances in which the only abnormality in the curve is the height to which it rises, frequently above 200. These persons who exhibited "lag curves" or "high curves" subsequently did not develop diabetes.[9]

It is well known that in many nondiabetic patients, especially in elderly persons with arteriosclerosis and hypertensive disease, hyperglycemia is often found. Their sugar metabolism with the aid of a high blood sugar is normal and most of these persons do not develop diabetes in the clinical sense, although they have commonly been put in the vague, possibly unwarranted, classification of prediabetes. Here again is an example of the satisfactory utilization of sugar under the stimulus of hyperglycemia, which, in itself, produces no untoward effects.

In 1928 a report was made that an excess of sugar in the blood does not result in an increase of blood pressure in cases followed for a period of seven years.[10] One of these patients is still under observation and has not developed hypertension or other complications characteristic of diabetes in the course of thirteen years, while a persistent hyperglycemia without more than transient glycosuria prevailed, as shown in the accompanying table. This man has a tendency to have hypoglycemic reactions at a high blood sugar level.

Relation Between Blood Sugar and Blood Pressure *

	Number of Blood Sugar Determinations			Blood Pressure Determinations			
				Lowest		Highest	
Year	200 Mg. or Over	150 to 200 Mg.	Less Than 150 Mg.	Systolic	Diastolic	Systolic	Diastolic
1921	..	..	7	98	64	116	72
1922	10	5	11	92	58	114	78
1923	15	4	4	92	58	108	76
1924	8	4	4	82	58	110	66
1925	5	4	2	88	52	104	76
1926	8	3	0	86	58	104	78
1927	5	1	0	86	..	112	57
1928	8	0	0	97	61	128	84
1929	7	1	0	98	64	116	68
1930	5	0	0	90	64	128	60
1931	6	3	0	98	66	112	72
1932	4	2	1	94	55	126	78
1933	8	3	1	96	54	128	78
1934	2	4	2	102	66	122	64

* A man, aged 61, has had diabetes mellitus since 1921, the disease being mild originally but now severe. A fairly constant hyperglycemia, without more than transient glycosuria, did not elevate the blood pressure or bring about other complications of diabetes in thirteen years. These blood sugar values are low for this patient, since no determinations were made when the urine showed sugar.

The rapid circulation of the blood furnishes constantly repeated stimuli to all the agencies in the body capable of utilizing dextrose, and the advantages of hyperglycemia in promoting the storage and oxidation of dextrose thus becomes apparent. The carbohydrates are absorbed from the intestinal canal, enter the blood as monosaccharides, principally dextrose, and then the various tissues and organs are repeatedly influenced by the blood dextrose because of the rapidly recurring circulation (fig. 2). The blood makes a complete circuit, being propelled from the heart and returning to the heart every three to five minutes, so that the opportunities for the normal disposal of dextrose when hyperglycemia exists are very great. The usual conception of carbohydrate metabolism disregards these multiple chances for the liver, voluntary and heart muscles, and other tissues to store and oxidize dextrose. The fact that this series of events does occur explains the transient character and harmlessness of hyperglycemia following on the ingestion of dextrose in some persons and also points to the benefits that may result from hyperglycemia in stimulating the utilization of dextrose.

5. Hirsch-Kauffmann, H., and Heiman-Trosien, A.: Bakterien Wachstum auf dem Blut Diabetischer Kinder, Klin. Wchnschr. **5**: 1922 (Oct. 8) 1926.

6. Handsmann, E.: Ueber die Ursache der verminderten Resistenz des Diabetikers gegen Infektionen, Deutsches Arch. f. klin. Med. **102**: 1, 1911.

7. Cori, C. F.: Mammalian Carbohydrate Metabolism, Physiol. Rev. **11**: 143 (April) 1931.

8. Soskin, Samuel; Katz, L. N.; Strouse, Solomon, and Rubinfeld, S. H.: Treatment of Elderly Diabetic Patients with Cardiovascular Disease, Arch. Int. Med. **51**: 122 (Jan.) 1933.

9. Mosenthal, H. O.: The Interpretation of Sugar Tolerance Tests, M. Clin. North America **9**: 549 (Nov.) 1925.

10. Mosenthal, H. O.: The Relation of Blood Sugar to Blood Pressure, Am. J. M. Sc. **176**: 761 (Dec.) 1928.

HIGH BLOOD SUGAR WITH GLYCOSURIA

Small amounts of sugar may be constantly eliminated in the urine without any noticeable disturbance, as has been noted in cases of renal glycosuria, but a persistent glycosuria of sizable proportions representing a loss of 20 Gm. or more of sugar in the urine per day entails a number of sequelae for which the body can compensate during a considerable period, but not indefinitely.

Weir Mitchell [11] made some interesting observations on this subject as long ago as 1860. He found that neither large doses of sugar administered to frogs, nor water deprivation alone, resulted in cataract; however, if the frogs were saturated with sugar and at the same time taken out of water, cataract developed within a few hours, but when the animals were again immersed in water, the cataract that had begun to form cleared up rapidly and completely. Transferring these observations to diabetes, it can be concluded that hyperglycemia without glycosuria is harmless but that hyperglycemia

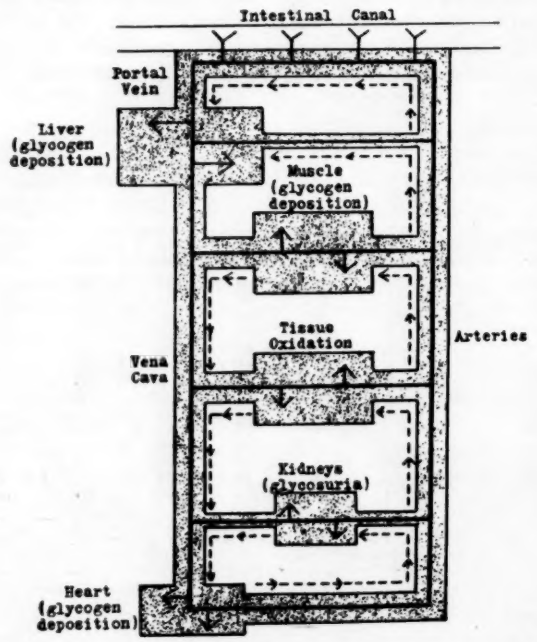


Fig. 2.—The disposal of absorbed dextrose. It is desired to emphasize the fact that the various tissues and organs repeatedly exert their effect on the blood dextrose because of the rapidly recurring circulation.

associated with glycosuria, polyuria and dehydration is responsible for most of the serious complications in diabetes.

In our experience, diabetic arteriosclerosis resulting in gangrene and angina pectoris and cataract occur almost solely in those patients who have been extremely careless about their diet and insulin control for a period of five years or longer. Glycosuria and polyuria entail a most devastating series of events that cause untold damage—dehydration, desiccation of the tissues, hemoconcentration, undernutrition through loss of sugar in the beginning and subsequently through increased protein destruction and hypoproteinemia, acidosis, loss of electrolytes of the intracellular and extracellular fluids, diminished oxygen capacity of the blood, and decreased blood supply to the skin, heart and muscles. The idea that these changes, detected by painstaking laboratory determinations, are due entirely to polyuria and glycosuria and are not brought about by uncomplicated hyperglycemia alone, is generally acknowledged (Chang, Harrop and Schaub,[12] Lande,[13] Atchley and his associates,[14] Peters, Kydd and Eisenman,[1] and Himwich and his associates [15]). When these effects of sugar and water loss have become manifest, all these authors agree that the blood sugar may be reduced to normal and yet the condition may be far from controlled, thus indicating that blood sugar is not the pivotal point in the treatment of diabetes.

Moen and Reimann [16] found that in "controlled" diabetes agglutinins for typhoid bacilli after vaccination developed as in normal persons, but in moderately controlled or uncontrolled diabetes the agglutinin response was weaker or poor. Phlorhizin diabetes (in which there is only glycosuria and no hyperglycemia) in rats and mice diminishes their resistance to infection.[17] These experiments indicate that loss of large amounts of sugar in the urine diminishes resistance to infection even in the absence of hyperglycemia. It is the opinion of Aschoff [18] that arteriosclerosis is brought about by the dehydration of both intracellular and extracellular materials. Thus, whatever serious complication of diabetes is considered—malnutrition, acidosis, coma, liability to infections or arteriosclerosis—the cause for it does not appear to be hyperglycemia without glycosuria, but glycosuria and polyuria; that is, an extraordinary and long continued loss of sugar and water in the urine.

SUMMARY

1. High blood sugar in the absence of glycosuria is not due to diminished excretory activity of the kidney, nor is it significant of nephritis, but it is a harmless anomaly resulting from an unusually active reabsorption of sugar from the urine in the renal tubules.

2. While a normal blood sugar level and freedom from glycosuria are among the ideal objectives of therapy in diabetes, there are certain circumstances in which hyperglycemia and glycosuria should not be completely corrected:

(*a*) A normal blood sugar level and freedom from glycosuria should not be gained by underfeeding, since malnutrition favors the development of arteriosclerosis and is one of the contributory factors in producing diabetic coma.

(*b*) Small amounts of sugar may be eliminated in the urine without detrimental results, as shown in renal glycosuria. It is important to recognize this because, in cases of diabetes with a comparatively low renal threshold, there is with rigorous insulin control the possibility of repeated hypoglycemic reactions, which in all probability are injurious in both their immediate and their remote effects and, consequently, should be avoided even at the sacrifice of intermittent glycosuria.

(*c*) Hyperglycemia without glycosuria, according to the available evidence, not only has no damaging effect on the heart and other tissues but is a necessary stimulus for the proper assimilation and oxidation of dextrose in many persons, both diabetic and nondiabetic.

11. Mitchell, S. W.: On the Production of Cataract in Frogs by the Administration of Sugar, Am. J. M. Sc. **39**: 106, 1860.

12. Chang, H. C.; Harrop, G. A., Jr., and Schaub, B. M.: The Circulating Blood Volume in Diabetic Acidosis, J. Clin. Investigation **5**: 407 (April) 1928.

13. Lande, Herman: Uncontrollable Causes of Death in Diabetic Coma, J. A. M. A. **101**: 9 (July 1) 1933.

14. Atchley, D. W.; Loeb, R. F.; Dickinson, W. R., Jr.; Benedict, Ethel M., and Driscoll, Mary E.: On Diabetic Acidosis: A Detailed Study of Electrolyte Balances Following with Withdrawal and Reestablishment of Insulin Therapy, J. Clin. Investigation **12**: 297 (March) 1933.

15. Himwich, H. E.; Fazikas, J. F.; Nahum, L. H.; Du Bois, Delafield; Greenburg, Leonard, and Gilman, A. Z.: Diabetic Hyperpyrexia, Am. J. Physiol. **110**: 19 (Nov.) 1934.

16. Moen, J. K., and Reimann, H. A.: Immune Reactions in Diabetes, Arch. Int. Med. **51**: 789 (May) 1933.

17. Leo, H.: Beitrag zur Immunitätslehre, Ztschr. f. Hyg. u. Infektionskr. **7**: 505, 1889.

18. Aschoff, Ludwig, in Cowdry, E. V.: Arteriosclerosis, New York, Macmillan Company, 1933.

3. A prolonged, marked glycosuria with its attendant polyuria and dehydration is responsible for the diminished resistance to infectious processes, arteriosclerosis, formation of cataract, malnutrition, acidosis and coma, which are so characteristic of diabetes. Hyperglycemia without glycosuria is not a cause for these complications in diabetes.

889 Lexington Avenue.

ABSTRACT OF DISCUSSION

DR. ELLIOTT P. JOSLIN, Boston: Hyperglycemia is a warning signal. Dr. Mosenthal has distinguished between the cause of harmless and of harmful hyperglycemia. What puzzles me about the theoretical side of the question is that the diabetic patients who show hyperglycemia without glycosuria are old, have arteriosclerosis, cannot see or have gangrene, and yet these are the very ones whose tubules are spry and functioning better than ever in their previous lives. It seems like an anachronism that the older the diabetic patient is, the better his tubules work. The charts that Dr. Mosenthal showed present more blood sugars of 200 mg. or more in 1922 and 1923 than in 1933, and still less in 1934. Dr. Mosenthal is an exponent of sound treatment and this may be one of the reasons why his patient has done well. Faithful, honest treatment in the course of time will lower many a queer high blood sugar.

DR. EDWIN J. KEPLER, Rochester, Minn.: Should the medical practitioner be satisfied merely if diabetic patients do not excrete sugar in the urine, or should he demand further that the blood sugar be reduced to a level that approximates normal? At present there is no dogmatic answer to this question. The problem can be simplified if the objectives of treatment in diabetes are kept in mind. These objectives can be summarized briefly as follows: 1. The cardinal and incidental symptoms of diabetes should be controlled. This objective has been attained. 2. The development of degenerative lesions (chiefly arterial) incidental to diabetes should be prevented. Here the results obtained leave much to be desired. One of the chief reasons for failure lies in the fact that the cause of the high incidence of atherosclerosis in cases of diabetes is not known, and consequently to a certain extent treatment is on a theoretical basis. Various theories, incriminating a high level of the blood sugar, protein, salt, calcium, vitamins and, more recently, cholesterol have been propounded. These theories are reflected in the confusing multiplicity of diets that are advocated. Dr. Mosenthal has presented additional evidence that the high level of blood sugar without glycosuria is not responsible for these arterial changes. In this respect I am in accord with him. It is useful for the purpose of treatment to classify cases of diabetes as: 1. Juvenile and adolescent; in these it probably would be beneficial to keep the blood sugar normal at all times; however, many of these are "brittle cases" and the blood sugar fluctuates violently and suddenly. 2. Early and adult, in which I prefer to keep the blood sugar normal; in a considerable number of these cases this can be done satisfactorily, and, if the blood sugar is normal, one knows that the disease is being controlled. 3. Senile and senescent, in which I am satisfied to keep the urine free from sugar and let the blood sugar seek its own level. There are a number of plausible scientific reasons, dealing chiefly with the behavior of the heart afflicted with coronary disease when the blood sugar is suddenly lowered, to support this view. There is another less scientific reason, however; namely, that elderly individuals do not tolerate sudden shifts in their intrinsic or extrinsic environment, and many of them have become habituated to a high level of the blood sugar. If overenthusiastic attempts are made to lower the blood sugar to "normal" by insulin or a too rigid diet, many of these patients are made miserable.

DR. W. S. COLLENS, Brooklyn: The usual procedure in following the progress of a diabetic patient, whether in practice or in recording in the literature, consists in the observation of the patient's urinary excretion of sugar in twenty-four hours, and the determination of the fasting blood sugar. I should like to ask Dr. Mosenthal whether he followed that procedure in his report, and whether the blood sugars that he reported were obtained under fasting conditions. We carried out some investigations at the Greenpoint Hospital to attempt a clinical interpretation of the fasting blood sugar. We performed twenty-one blood sugar studies on this patient over a thirty-hour period, at intervals varying between one and two hours. At 6 o'clock in the morning the patient's fasting blood sugar was 275 mg., at 7 o'clock it was 350. He then received his insulin and his breakfast, and for the next hour his blood sugar continued to rise to 400. At the end of an hour it proceeded to drop at a very rapid and precipitate rate of 1.7 mg. per minute, so that by noon it reached 50 mg. He received his insulin and his lunch at 11:30. His blood sugar then continued at this level, and at 4:30 he received his insulin and his supper. At 10 o'clock at night his blood sugar was still under 100. At 3 o'clock in the morning it showed its first rise to 125 mg., and from then on it continued to rise progressively, indicating that the insulin effect had worn off. The next morning he was not given any breakfast or any insulin, for we wished to determine the character of the fasting blood sugar at different hours of the morning. At 6 o'clock it was back to 340, at 8 to 375, at 10 to 415, and at 12 to 454. We repeated this experiment eight days later on the same patient, and instead of giving insulin and supper at 4:30 we gave them at 7. The result was that everything was delayed exactly two and a half hours, so that at 6 o'clock in the morning, instead of a blood sugar of 340, it was 110, and at 8, when it was 375 originally, he had 224. This does not mean that at the time the second experiment was performed his diabetes was less severe. It merely means that the recovery phase following the insulin effect was delayed because the insulin given with his supper was administered at a later hour. The fasting blood sugar depends first on the totality of the patient's diabetes, secondly, on the amount of food that the patient receives in the previous meal, thirdly, on the amount of insulin he receives with the previous meal, and fourthly, on the time the intern gets up to take the blood. It simply means that the content of sugar in the blood is not a static phenomenon, that a patient receiving insulin as part of his treatment and adequately controlled possesses a normal blood sugar for more than eighteen hours of the twenty-four hour cycle, and that the blood sugar rises only in the early morning hours when there is no effect from insulin.

DR. CHARLES T. MAXWELL, Sioux City, Iowa: Hyperglycemia probably exists at times in all patients with diabetes of any severity. The normal individual weighing 150 pounds (68 Kg.) with a blood sugar of 100 has approximately 5 Gm. of sugar circulating in his total blood volume. With an increase of blood sugar to 140, he adds but 2 Gm. to his total blood sugar. That is a pretty close regulation to ask the diabetic patient to follow. My interest is based on the care of patients and a number of years' personal experience as a diabetic patient. I believe that the blood sugar in younger individuals, who haven't become tolerant of high blood sugar, should be kept as near normal as possible. In all cases the sugar curve should be kept as regular and smooth as possible. The time element in the use of insulin is not sufficiently emphasized and it must be worked out in the individual patient. Insulin should be given long enough before food, especially breakfast, to cause a falling sugar curve when the food is given. This will give a less pronounced rise after food, a smoother curve throughout, and less liability of an insulin reaction later in the day.

DR. A. A. HEROLD, Shreveport, La.: I would like to ask Dr. Mosenthal two questions. First, has he made the observation that the long-continued use of insulin seems to raise the renal threshold? It has been my experience that a patient who has been taking insulin for a long period of time has a higher blood sugar when he begins to show glycosuria than he had previous to using insulin. Second, has he ever observed symptoms of severe diabetes, including dehydration, in patients without glycosuria? I recall one patient who showed no glycosuria, with a blood sugar of more than 600 mg. In these extreme cases, I believe that more attention should be paid to the hyperglycemia.

DR. HERMAN O. MOSENTHAL, New York: The objectives in the treatment of diabetes are decidedly different now than they were some years ago. Beginning with the first day a patient with diabetes is seen, the aim is to prevent arteriosclerosis, which, through coronary disease, gangrene and cere-

bral accidents, is largely responsible for the present-day diabetes mortality. This is the crucial problem in diabetes therapy at the moment. The maintenance of nutrition and the prevention of acidosis and coma, which loomed so ominously before the introduction of insulin, have been robbed of their threat, when diet and insulin are conscientiously and intelligently used. It is my contention that a blood sugar concentration above the accepted level of normal is not harmful, provided there is no glycosuria and dehydration. A high blood sugar will favor the assimilation and utilization of dextrose by the tissues and is not a factor in reducing the bodily resistance to infections or in promoting the development of arteriosclerosis. In many cases of diabetes, the burden and hazards of treatment are increased a great deal when a normal blood sugar level is insisted on. The case demonstrated, it is true, shows fewer blood sugar determinations above 200 in later years than at first, but it is obvious that the total number of blood sugar determinations has diminished since this patient has gained confidence and does not visit me as often now as formerly. The blood sugars in this patient are at low levels for him, since blood sugar determinations were made only on the days on which the urine specimens were sugar free; when there is glycosuria, it may be taken for granted that the blood sugar is too high. Dr. Collens has called attention to the extreme variability of the blood sugar level. I have found this to be true. For many years I have taken the blood specimens for sugar determinations some hours after breakfast and after the first dose of insulin, believing that in specimens of blood taken at that time a more representative blood sugar value is obtained. In patients who are under insulin therapy the blood sugar is prone to be high before breakfast, and in those who do not receive insulin the blood sugar is usually at its maximum two hours after breakfast or later in the day.

A STUDY OF ACTIVE IMMUNIZATION AGAINST SCARLET FEVER

IN CHARITABLE INSTITUTIONS AND PUBLIC SCHOOLS OF PHILADELPHIA

J. NORMAN HENRY, M.D.
Director, Department of Public Health
PHILADELPHIA

This paper, as its title indicates, is an account of experiences of the Department of Public Health of Philadelphia with active immunization against scarlet fever. It is not in any sense a bacteriologic or biologic discussion of the specific nature of the streptococcus of scarlet fever or of the biology of the toxin. It is, however, a record of a sufficient number of cases to give weight to the conclusions that in this method of immunizing, as laid down by the Dicks, there is a sure means for the prevention of the disease and its after-effects.

It seems strange that reiteration of experience already so great and of figures should be necessary to convince the medical men at large of the efficacy of the proceeding, particularly in the light of their attitude toward diphtheria prevention in its struggle for general adoption. Almost ten years of accumulated facts was needed before final and complete acceptance was obtained, in spite of indisputable scientific proofs. Just so today is the same obstructive conservatism holding back the general adoption of scarlet fever prevention in private practice and public health work, at an enormous cost of suffering and death, not to mention the lesser question of cost in money and time.

The objectors bring up the threadbare question—again and again has it been answered—Does not the toxin conquer only some symptoms of the disease, such as the rash, and thus make a more dangerous situation than was existent prior to its administration?

Another objection, and this a more real one, is on the ground of the reactions. The answer to the first question is emphatically no, if proper doses as laid down by the Dicks are used. The proof of the truth of the statement lies in the fact that there have been no cases of sickness in those who have been declared immune or who have been immunized which are in any degree suggestive of scarlet fever without rash or of any other group of symptoms or complications of the disease. The reactions are at times marked, but never sufficiently so as to have weight to overcome the value of the immunity conferred.

In Philadelphia we have been fortunate in having two experiences which we, at least, would not have sought voluntarily but which served as a valuable example to us in the very beginning of our work.

In 1926 scarlet fever immunization was introduced among the nurses and physicians at the Philadelphia Hospital for Contagious Diseases. Formerly there had been the usual heavy incidence of contagion common in such institutions. For several years after its introduction no case of scarlet fever developed in physicians or nurses fully immunized. When, however, in 1929 a former director of public health was persuaded to abandon the compulsory immunization, the disease again appeared in physicians and nurses, again to be eliminated ever since on the reintroduction (fourteen months later) of the use of the toxin. Twelve cases developed in the fourteen months of suspension of immunizations.

A second occurrence was an object lesson of equal or greater value to us, and again we were the innocent gainers in experience because of a situation that neither party concerned in would willingly have produced in the light of our convictions. Our work on any considerable scale began with the examination and immunization of children, nurses and attendants in a large private charity home and of a health center, under the jurisdiction of the Department of Public Health of Philadelphia, by Dr. Gladys Dick, who had kindly consented to inaugurate the work in Philadelphia.

In the case of the home, a year later a number of new children were admitted and scarlet fever broke out among them, but not one child (with one exception [1]) or adult, declared immune or injected by Dr. Dick, took the disease, and the small epidemic was immediately arrested when the new children were tested and immunized. There was some misunderstanding that led to this interesting human experiment; the physician at the home and the department of public health were each awaiting a call from the other, which did not come until the fire alarm of scarlet fever.

The work of Dick testing and immunization against scarlet fever, as a public health measure, was begun in the latter part of 1932, and from that time until March 1, 1935, 10,057 children have been tested and those found susceptible treated. Of these, 4,053 were children living in institutions and 6,004 came from private homes. Most of the institutions seeking the treatment had recently experienced infection of scarlet fever, and the immunologists of the department of public health visited the homes and orphanges to make the test and administer the treatment at the request of the institution. Six thousand and four children came

Read before the Section on Pediatrics at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 14, 1935.

1. The child in question, a patient with Little's disease, had had scarlet fever and took it again after our test. At all times the skin test was negative.

from private homes and sought the treatment by the immunologists in the ten health centers conducted by the department of public health. Of these, 58 per cent were found positive and were immunized. Of the 4,053 children living in institutions, 1,052 (26 per cent) were found positive to the Dick test. The ages of the children tested in institutions ranged from under 1 year to 16 years. This is a low percentage of susceptibility but is above that usually found in children who have lived in institutions for some years.

TABLE 1.—*Results of Dick Test Given by the Department of Public Health of Philadelphia*

	Positive	Negative	Percentage Positive	Percentage Negative
Reactions to Dick Test Administered to Children in Institutions for 1933-1934 up to March 1, 1935				
Under 1 year	14	69	17	83
1 to 2 years	69	38	64	36
2 to 3 years	57	59	49	51
3 to 4 years	47	105	31	69*
4 to 5 years	48	49	49	51
5 to 6 years	49	52	49	51
6 to 7 years	81	108	43	57
7 to 8 years	64	161	28	72
8 to 9 years	77	180	30	70
9 to 10 years	61	182	25	75
10 to 11 years	59	164	26	74
11 to 12 years	54	179	23	77
12 to 13 years	46	181	20	80
13 to 14 years	31	162	16	84
14 to 15 years	30	148	17	83
15 to 16 years	35	143	20	80
Over 16 years	230	1,020	18	82
Total number of Dick tests (4,053)†	1,052	3,000	25	74
Reactions to Dick Test Administered to Children Not Living in Institutions for 1933-1934 up to March 1, 1935‡				
Under 1 year	39	17	70	30
1 to 2 years	703	157	82	18
2 to 3 years	712	210	77	23
3 to 4 years	562	276	67	33
4 to 5 years	385	234	62	38
5 to 6 years	246	214	53	47
6 to 7 years	232	226	51	49
7 to 8 years	199	290	41	59
8 to 9 years	156	287	35	65
9 to 10 years	75	157	32	68
10 to 11 years	42	111	27	73
11 to 12 years	8	78	9	91
12 to 13 years	13	65	17	83
13 to 14 years	6	40	13	87
14 to 15 years	6	13	32	68
15 to 16 years	7	16	30	70
Over 16 years	13	108	11	89
Total number of Dick tests (6,004)§	3,404	2,499	58	42

* St. Vincent's Hospital contributed most of the cases in the 3 to 4 year group and many of the children had recently been injected with toxin-antitoxin for diphtheria immunizations.

Tested in institutions	4,053
Other than institutions	6,004
Sum total	10,057
† Positive	1,052
Negative	3,000
Not read	1
Total Dick tests	4,053

‡ This includes a group of 951 children Dick tested in public schools in the fortieth ward; 447 of these children were positive and 445 were negative, or an average of 50 per cent positive and 50 per cent negative. Fifty-nine children were Dick tested and not read.

§ Positive	3,404
Negative	2,499
Did not return for Dick test reading	101
Total Dick tests	6,004

Table 1 shows, according to age, the percentage of positive reactions to the Dick test among children living in institutions and those outside.

REACTIONS AFTER ADMINISTRATION OF SCARLET FEVER TOXIN

Of the first 790 cases, 65.7 per cent showed no reactions to any of the injections of the toxin, 30.1 per cent showed slight reactions after one or another of the various doses. The reactions may occur after any one of the injections but were found most common after the third and fourth. Thirty-three cases (4.2 per cent) showed marked reactions consisting of nausea, vomiting, fever, sometimes as high as 103 F., sometimes scarlatinal rash, sore throat, and pain in the joints and abdomen. Usually not all this rather formidable array of symptoms appeared in any one child, and it must be borne in mind that the toxin is a specific emetic and that the vomiting has less significance than if it were an evidence of systemic disturbance. The symptoms of reaction always appeared within six hours after the administration of the toxin and usually disappeared in a few hours. The most severe seldom were present for more than twenty-four hours. Causes other than toxin should be sought if illness is present for forty-eight hours or more after the treatment. Interestingly enough, the reactions were in these early cases less severe in the children in institutions than in those who were treated in health centers.

It was apparent that the after-care of the child is of great importance in modifying the severity of the reactions, and those who were given rest in bed and light diet after each treatment seldom had any but the mildest of reactions. Conversely, those who were allowed to exercise actively and to eat more or less heavy meals were more prone to marked reactions.

It is of importance in public health work to obtain the cooperation of the parent and clearly inform him or her what to expect after any or all treatments; also, to instruct all concerned in the necessity of reasonable care of the child. In Philadelphia the department of public health issues a notice to the parent explaining the situation and emphasizing the need of after-care. Of course this is not necessary in private work, but at all times warning should be given of possibilities of unpleasant after-effects and particularly of the possibility of the appearance of a rash.

TABLE 2.—*Report on Re-Dick Tests (March 1935) to Determine Any Change in Immunity After Negative Primary Dick Test*

Age at Primary Dick Test	Date and Number of Primary Tests		Positive	Negative	Total Number of Re-Dick Tests
Under 1 year	Oct. 1933	5	0	5	5
1 to 2 years	Oct. 1933	9	0	9	9
2 to 3 years	June 1932	6	0	6	
	March 1933	1	0	1	7
3 to 4 years	June 1932	7	0	7	7
4 to 5 years	June 1932	4	0	4	
	March 1933	1	0	1	5
5 to 6 years	June 1932	1	0	1	
	March 1933	3	0	3	4
6 to 7 years	June 1932	2	0	2	
	March 1933	3	0	3	5
7 to 8 years	March 1933	4	0	4	4
8 to 9 years	June 1932	1	0	1	
	Feb. 1933	1	0	1	
	March 1933	12	0	12	14
9 to 10 years	Feb. 1933	5	0	5	
	March 1933	10	0	10	15
10 to 11 years	Feb. 1933	1	0	1	
	March 1933	14	0	14	15*
11 to 12 years	Feb. 1933	3	0	3	
	March 1933	15	0	15	18
12 to 13 years	Feb. 1933	6	0	6	
	March 1933	6	0	6	12
13 to 14 years	Feb. 1933	4	0	4	
	March 1933	6	0	6	10
14 to 15 years	Feb. 1933	3	0	3	
	March 1933	4	1	3	7
15 to 16 years	Feb. 1933	2	0	2	
	March 1933	2	0	2	4
Over 16 years	June 1932	2	0	2	
	Feb. 1933	1	0	1	
	March 1933	1	0	1	
	Oct. 1933	10	0	10	14
Percentage positive, 0.6	Total		1	154	155

* One child in the 10 to 11 year group had a doubtful reaction, possibly a protein reaction.

An analysis of our more recent 1,035 cases showed a much smaller percentage of reactions than was present in our earlier cases, and but 0.2 per cent were severe. Practically all of these cases were of school children, therefore ambulatory cases, and it is difficult to explain our favorable result unless it is that the instructions for after-care were given more attention than before. In the judgment of all concerned in the work in Philadelphia there is an overemphasis laid on the reactions. Local reactions were in no case severe, and no abscesses or ulceration occurred in any of the cases treated.

TABLE 3.—*Report on Re-Dick Tests (March 1935) to Determine Any Change in Immunity After Re-Dick Test Was Negative Following Treatment*

Age at Primary Dick Test	Date and Number of Negative Re-Dick: After 5 Doses	After 6 Doses	Positive	Negative	Total No. of Present Re-Dick Tests
1-2 yrs.	June 1932 3	.....	0	3	
		July 1933 1	0	1	
		Aug. 1933 1	0	1	
	Sept. 1933 4	Sept. 1933 2	0	6	
	Oct. 1933 1	.....	0	1	
	Nov. 1933 1	.....	0	1	
	Jan. 1934 1	.....	0	1	
	April 1934 2	.....	0	2	16
2-3 yrs.	June 1932 6	.....	0	6	
		Sept. 1933 1	0	1	
	Oct. 1933 4	.....	1	3	
	Nov. 1933 1	.....	0	1	
	Dec. 1933 1	.....	0	1	
	Feb. 1934 1	.....	1	0	
	April 1934 1	.....	0	1	15
3-4 yrs.	June 1932 4	.....	0	4	
		March 1933 1	0	1	
		April 1933 2	0	2	
	July 1933 1	July 1933 1	0	2	
	Aug. 1933 2	.....	0	2	
	Oct. 1933 2	.....	0	2	
	Nov. 1933 1	.....	0	1	
	Jan. 1934 1	.....	0	1	
	April 1934 1	.....	0	1	16
4-5 yrs.	June 1932 2	.....	0	2	
	March 1933 1	.....	0	1	
	Dec. 1933 2	.....	0	2	5
5-6 yrs.	June 1932 1	June 1932 1	0	2	
	Feb. 1933 1	.....	0	1	
	Sept. 1933 2	.....	0	2	
	Oct. 1933 4	.....	0	4	
	Jan. 1934 2	.....	1*	1	
	March 1934 3	.....	0	3	14
6-7 yrs.	June 1932 1	.....	0	1	
	Feb. 1933 2	.....	0	2	
	March 1933 4	March 1933 1	0	5	
	Aug. 1933 1	.....	0	1	
	Sept. 1933 2	.....	0	2	
	Nov. 1933 1	.....	0	1	12
7-8 yrs.	Feb. 1933 3	.....	0	3	
	March 1933 7	.....	0	7	
		Aug. 1933 1	0	1	
	Sept. 1933 1	.....	0	1	12
8-9 yrs.	Feb. 1933 3	.....	1	2	
	March 1933 8	.....	0	8	
	Sept. 1933 1	.....	0	1	12
9-10 yrs.	Feb. 1933 8	.....	0	8	
	March 1933 8	.....	0	8	16
10-11 yrs.	Feb. 1933 1	.....	0	1	
	March 1933 9	.....	0	9	10
11-12 yrs.	Feb. 1933 5	.....	1	4	
	March 1933 6	.....	0	6	
	April 1933 1	.....	0	1	
	Sept. 1933 1	.....	0	1	13
12-13 yrs.	March 1933 2	.....	0	2	2
13-14 yrs.	Feb. 1933 2	.....	0	2	
	March 1933 7	.....	0	7	9
14-15 yrs.	March 1933 2	.....	0	2	2
15-16 yrs.	Feb. 1933 1	.....	0	1	1
Over 15 yrs.	June 1932 1	.....	0	1	
	Feb. 1933 1	.....	0	1	
	March 1933 2	.....	0	2	4
Percentage positive, 3.1		Total number.....	5	154	159

* The positive case in the 5-6 year group was exposed to scarlet fever, January 1935, but did not contract the disease.

RESULTS OF RE-DICK TESTING AFTER FIVE DOSES OF SCARLET FEVER TOXIN

In a study of the first 790 cases found positive to the Dick test and subsequently treated with the scarlet fever toxin, 98.5 per cent showed negative reactions to the Dick test after five consecutive injections of the scarlet fever toxin. In 1.25 per cent a sixth dose of the toxin was required before a negative reaction was obtained and only 0.25 per cent, or two cases, remained positive after a repetition of the fifth dose.

OCCURRENCE OF SCARLET FEVER AFTER A NEGATIVE DICK TEST

In a group of 159 cases treated in 1932, 1933 and 1934 and read negative to the Dick retest at that time, we found on retesting in March 1935 that only 3.1 per cent varied in reaction from the finding of a year or two before.

No case of scarlet fever has developed in any institution in which the patient was tested by one of the city immunologists.

In the 3,404 children treated in the health centers, scarlet fever developed in three cases after a series of doses of the scarlet fever toxin.

Two children, aged respectively 3 and 4 years, after five doses of the toxin were found positive on re-Dick testing, and when the fifth dose was repeated two weeks later a second retest gave negative results. In these children scarlet fever developed a year after the administration of the treatment. Whether the immunity wore off or the reading of the last re-Dick test was inaccurate is difficult to state.

TABLE 4.—*School Age Group Dick Tested in Fortieth Ward, January 1935*

Ages	Positive	Negative	Percentage Positive	Percentage Negative
5 to 6 years.....	25	16	61	39
6 to 7 years.....	116	78	60	40
7 to 8 years.....	114	119	49	51
8 to 9 years.....	111	119	48	52
9 to 10 years.....	61	74	45	55
10 to 11 years and over.....	20	39	34	66

Fifty-nine children were Dick tested and readings were not made.

One child, aged 15 months, treated in 1933 with five doses of scarlet fever toxin, was re-Dick tested two weeks later, gave a negative reading and developed scarlet fever one year later.

In one patient with Little's disease, giving a negative reading (by Dr. Dick) on the primary Dick test in July 1932 and a history of having had scarlet fever, the second attack of scarlet fever developed in the fall of 1932. This child has been subjected to subsequent Dick testing and on each occasion has been negative to the test.

DURATION OF IMMUNITY

The experience in the Philadelphia work in respect to the duration of immunity as evidenced by the Dick test has been eminently satisfactory as far as our history goes.

Thus in a large orphanage, where the ages of the children ranged between 6 and 16 years, with the major portion in the older group, there were found early in 1933 only 9 per cent susceptible, as shown by the positive primary Dick test. Three months after the initial testing ninety of the group under 10 years of age, previously found negative to the test, were retested, and there was no variation from the original finding. In the fall of 1934, twenty of these children were again tested and there was no variation from the original finding.

In a foundling asylum where more than 400 children were Dick tested in 1933, eighty children in the 3 to 4 year age group in one dormitory showed a very low percentage of positive reactions after primary Dick testing. This group had recently received a third dose of toxin-

antitoxin for diphtheria immunization. Six months after the initial test, the group showing negative reactions was retested and one child showed a very slight positive reaction.

In the group re-Dick tested after treatment with the scarlet fever toxin in 1933, we found that 3.1 per cent showed a change from a negative to a positive reaction when re-Dick tested in March 1935.

TABLE 5.—*Analysis of First Seven Hundred and Ninety Cases*

Re-Dick	Negative After 5 Doses	Negative After 6 Doses	Still Positive	Local Reaction			General Reaction		
				Bright Red	Medium	Faint	None	Severe	Mild
Under 1 year	13	0	0	1	9	3	6	1	6
	100%	0	0	7⁹/₁₃%	69³/₁₃%	23¹/₁₃%	46.1%	7.8%	46.1%
1 year	152	2	0	18	93	43	64	16	74
	98.7%	1.3%	0	11.7%	60.4%	27.9%	41.5%	10.4%	48.1%
2 years	134	2	0	20	73	43	66	5	65
	98⁹/₁₇%	1³/₁₇%	0	14.7%	53.7%	31.6%	48.5%	3.7%	47.8%
3 years	107	1	1	17	51	41	83	2	24
	98.2%	0.9%	0.9%	15.6%	46.8%	37.6%	76.1%	1.8%	22.1%
4 years	94	2	1	10	45	42	72	2	23
	97%	2%	1%	10.3%	46.4%	43.3%	74%	2%	24%
5 years	85	1	0	7	43	36	68	3	15
	99%	1%	0	8.1%	50%	41.9%	79.1%	3.5%	17.4%
6 years	83	1	0	8	43	33	63	3	18
	98.8%	1.2%	0	9.5%	51.2%	39.3%	75%	3.6%	21.4%
7 years	29	0	0	4	13	12	26	0	3
	100%	0	0	13.8%	44.8%	41.4%	89.7%	0	10.3%
8 years	31	0	0	3	14	14	27	0	4
	100%	0	0	9.6%	45.2%	45.2%	87.1%	0	12.9%
9 years	11	1	0	0	9	3	10	0	2
	91⅔%	8⅓%	0	0	75%	25%	83⅓%	0	16⅔%
10 years	14	0	0	1	6	7	12	0	2
	100%	0	0	7¹/₇%	42⁸/₇%	50%	85⁵/₇%	0	14²/₇%
11 years	6	0	0	0	4	2	6	0	0
	100%	0	0	0	66⅔%	33⅓%	100%	0	0
12 years	6	0	0	1	2	3	6	0	0
	100%	0	0	16⅔%	33⅓%	50%	100 %	0	0
13 years	1	0	0	0	1	0	1	0	0
	100%	0	0	0	100%	0	100%	0	0
14 years	1	0	0	1	0	0	0	1	0
	100%	0	0	100%	0	0	0	100%	0
15 years	2	0	0	0	1	1	2	0	0
	100%	0	0	0	50%	50%	100%	0	0
16 years	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0
Adults	9	0	0	1	1	7	7	0	2
	100%	0	0	11¹/₉%	11¹/₉%	77⁷/₉%	77⁷/₉%	0	22²/₉%
Total children or cases (790)	778	10	2	92	408	290	519	33	238
	98.5%	1.25%	0.25%	11.6%	51.7%	36.7%	65.7%	4.2%	30.1%

TABLE 6.—*Study of Last One Thousand and Thirty-Five Cases*

Re-Dick	Negative After 5 Doses	Negative After 6 Doses	Still Positive	Local Reaction			General Reaction		
				Bright Red	Medium	Faint	None	Severe	Mild
1 year	72	3	0	18	38	19	41	0	34
	96%	4%	0	24%	50.7%	25.3%	54.7%	0	45.3%
2 years	90	1	0	13	56	22	62	1	28
	98.9%	1.1%	0	14.3%	61.5%	24.2%	68.2%	1%	30.8%
3 years	79	1	2	13	45	24	58	0	24
	96.4%	1.2%	2.4%	15.9%	54.9%	29.2%	70.7%	0	29.3%
4 years	76	1	2	18	39	22	56	0	23
	96.2%	1.3%	2.5 %	22.8%	49.4%	27.8%	70.9%	0	29.1%
5 years	111	1	0	21	61	30	78	0	34
	99.1%	0.9%	0	18.7%	54.5%	26.8%	69.6%	0	30.4%
6 years	150	0	1	27	90	34	126	0	25
	99.3%	0	0.7%	17.9%	59.6%	22.5%	83.4%	0	16.6%
7 years	115	0	0	42	57	16	101	0	14
	100%	0	0	36.5%	49.6%	13.9%	87.8%	0	12.2%
8 years	106	3	0	32	52	25	98	1	10
	97.2%	2.8%	0	29.4%	47.7%	22.9%	89.9%	0.9%	9.2%
9 years	77	0	0	18	38	21	69	0	8
	100%	0	0	23.4%	49.4%	27.2%	89.6%	0	10.4%
10 years	31	0	0	5	19	7	26	0	5
	100%	0	0	16.1%	61.3%	22.6%	83.9%	0	16.1%
11 years	23	0	0	4	10	9	19	0	4
	100%	0	0	17.4%	43.5%	39.1%	82.6%	0	17.4%
12 years	22	0	0	4	10	8	18	0	4
	100%	0	0	18.2%	45.5%	36.3%	81.8%	0	18.2%
13 years	15	0	0	5	10	0	14	0	1
	100%	0	0	33.3%	66.7%	0	93.3%	0	6.7%
14 years	11	0	0	1	9	1	11	0	0
	100%	0	0	9.1%	81.9%	9.0%	100%	0	0
15 years	7	0	0	3	2	2	6	0	1
	100%	0	0	42.9%	28.6%	28.5%	85.7%	0	14.3%
16 years	10	0	0	3	6	1	9	0	1
	100%	0	0	30%	60%	10%	90%	0	10%
Adults	25	0	0	5	12	8	18	0	7
	100%	0	0	20%	48%	32%	72%	0	28%
Total	1,020	10	5	232	554	249	810	2	223
	98.5%	1%	0.5%	22.4%	53.5%	24.1%	78.3%	0.2%	21.5%

Table 2 surveys a group of children to whom the Dick test was primarily administered in 1932, 1933 or 1934 and found negative. These children were again tested in March 1935. In this group the change from a negative reaction to a primary Dick test in 1933 to a positive one in 1935 is 0.6 per cent.

Table 4 shows the results found in Dick testing 951 children in five public schools of the fortieth ward of the city of Philadelphia. The percentage of susceptibles in the different age groups ran very true to the accepted theory as to the susceptibility decreasing as the child grows older.

Our experience leads us to the following point of view: That the immunization against scarlet fever should be much more widely adopted and much more vigorously advocated by physicians than is done at present. That the proper administration and reading of the test most carefully within the specified time (from twenty to twenty-four hours) is fundamental. That the education of the parent is of importance in obtaining cooperation, and that the proper care of the child for a period of six hours after each injection will greatly lessen both the incidence and the severity of the reactions. That in my judgment the procedure should be adopted as a general measure alike in private practice and in public work. That scarlet fever can be eliminated as a serious private and public health problem.

Tables 5 and 6 show the detailed studies of re-Dick tests to determine changes of immunity over a period of three years, and a detailed analysis of the first 790 cases treated, and the last 1,035.

City Hall Square.

ABSTRACT OF DISCUSSION

DR. JOHN A. TOOMEY, Cleveland: Between 1921 and 1926, sixty-six nurses contracted scarlet fever at a time when the nursing population was small and there were few affiliates. Between 1926 and 1935, 1,049 susceptible students have been protected. Eight developed scarlet fever, two after the first immunizing dose; both had positive Dick tests on admission to the hospital. One came down after the second dose, although she had a negative test on admission; five had the complete series of five doses, four having been immunized to a negative Dick test, and these four were still negative reactors when later admitted to the hospital with scarlet fever. One student received seven injections but remained a positive reactor and was still so when she developed scarlet fever two years later. I have seen eight nurses who contracted scarlet fever in other hospitals. Two of these had two doses of toxin; one still had a positive test when she developed the disease, and the other was not tested. Six had had the complete series of five doses of toxin; four had been immunized to a negative Dick test and were negative reactors when they later contracted scarlet fever; one had been still positive after immunization and on later admission to the hospital. Discounting the incomplete immunizations, I had five failures of protection among my students, although four were immunized to a negative Dick test. One should not feel too bad about the failure of complete immunization in these few nurses. There are always immunization failures with any procedure. Even an attack of the natural disease does not immunize any better.

A committee of the American Academy of Pediatrics in a recent report to the members on the subject of active immunization in scarlet fever adopted the conservative attitude Dr. Henry speaks of. It did not condemn the use of scarlet fever toxin or deny its efficacy but felt that the reactions were severe enough to prevent general adoption of the procedure. Perhaps the use of a toxoid would help in avoiding these unpleasant reactions. Few nurses have not had some reaction from a local inflammatory response, minor in character and such as is seen with any immunizing procedure to the individual presenting all the signs of scarlet fever. Occasionally the reactions were so severe that I have had to stop the program of immunization, particularly in cases in which swollen joints developed. The type of scarlet fever present in the United States will have to be more severe for me to agree with Dr. Henry that this program should be made a public health measure. How long do these injections immunize the individual? Dr. Henry's observation extends in some instances to about three years. Our own nurses are protected for at least three years. I feel that this question will have to be answered before active immunization can be pushed as a public health measure.

DR. PASCAL F. LUCCHESI, Philadelphia: I am especially interested in the 6,004 children who were recruited from private homes, because they represent the average strata of life in the districts in which they reside and are therefore the type of patients with which the family physician is familiar. Of these children, 3,304 were found susceptible and were given weekly injections of scarlet fever toxin. The majority of them required five doses, but a sixth dose was necessary for a few. The faithfulness with which the parents brought their children to the nearby health centers week after week for these inoculations is the best recommendation that can be accorded this treatment; it is reasonable to assume that parents would not allow their children to return for injections if any serious reactions had been experienced. The much feared severe reactions were not experienced in this study. The reactions are in proportion to the cooperation between the physician and the parents, and also to the knowledge of the physician on this subject. This is demonstrated by the small number of severe reactions experienced by the department of public health in their study. In a group of 790 children, 30.1 per cent had very mild reactions and 4.2 per cent severe reactions, while in a group of 1,035 only 0.2 per cent had severe reactions. At the Philadelphia Hospital for Contagious Diseases this method of prevention has been in use since 1926. Up till now, 695 doctors and nurses have been given the Dick test, of whom 185, or 26.6 per cent, were found susceptible and immunized. No serious reactions have been experienced. The production of immunity by this method of prevention is even more startling. As high as from 98.5 to 99.6 per cent were immunized with five and six injections respectively. In one institution where I myself immunized twenty-nine children ranging in age from 18 months to 12 years a 100 per cent immunity was produced. An objection sometimes raised with reference to this method of immunization against scarlet fever as a public health measure is the length of time required for the completion of the treatment. The treatment can be completed in most cases in about six weeks, which includes the re-Dick test. However, when a sixth injection is required, in the event of a positive re-Dick test, eight weeks would be necessary. If one compares this with immunization against diphtheria, either by the injection of toxin-antitoxin or the one or two dose toxoid, it will be found that from six weeks to six months or longer may be required for the completion of the treatment, whereas in this form of treatment against scarlet fever within six or eight weeks one will know very definitely whether a patient has acquired immunity. The favorable response of Philadelphia parents to this treatment is most encouraging.

DR. THEODORE MELNICK, Philadelphia: It is a matter for regret that physicians in certain vicinities have been reluctant in accepting this preventive measure. This hesitancy can be attributed to the fact that the persons receiving the immunizing treatment may often experience after one or more of the toxin injections some unpleasant reactions such as headache, fever, nausea, vomiting, abdominal pain, scarlatiniform rashes and sore throat. While these reactions in themselves are not dangerous to life, they are of sufficient moment to make the clinician reluctant to use the toxin and more often cause the parents to refuse further treatment. Because of similar experiences, a series of experiments were undertaken with the hope of eliminating as much as possible both the severity and duration of the reactions. The following procedure was decided on: 1. A mild laxative the night before the day of the injection. 2. Restriction of food on the day of the injection both before and after the injection. 3. Restriction of activities after the injection. 4. Injection during the latter part of the day so that the individual will retire soon after the treatment. Drs. Dick, Kiefer, Smythe and Nesbit, Rhoades, Lees and today Drs. Henry and Toomey have reported reactions in from 10 to 30 per cent of individuals after receiving this immunizing treatment, which reactions lasted from twenty-four to forty-eight hours. Following the procedure I have just outlined, the reactions were milder and did not last as long as those reported by others. Only 4 per cent of individuals reacted, and fourteen hours later, or the morning following the injection, 98 per cent of those injected were up and about attending to their usual activities. Sore throat or eruptions were never encountered. As to the efficacy of this preparation, the value of scarlet fever immunization in the personnel of the contagious

disease hospitals has already been mentioned. My experience, both in private practice and otherwise, has been very encouraging. In one orphanage in which the children attended public schools in the neighborhood, not one case of scarlet fever has appeared since immunization three years ago, whereas, prior to this, cases cropped up every year. In another very large orphanage, no cases of scarlet fever appeared for two years after immunization. One case did appear in an inmate, recently admitted, who had never been Dick tested or immunized. No children in contact with the patient developed the disease. Scarlet fever immunization is advocated, but measures to lessen reactions should be instituted until the toxin preparation is improved on so that it will not cause any reactions.

DR. J. NORMAN HENRY, Philadelphia: I have been interested in Dr. Toomey's remarks, with which, incidentally, I do not agree. The object of my paper is to prove from actual experience that immunization against scarlet fever by the method described should be introduced generally as a public health measure. Because of this, I spoke in the rather strong way I did concerning obstructive conservatism. I submit that, when one has had a rather large experience for more than three years and a smaller one going back to 1926 with the results described in the paper, it is but natural that one should be convinced. Particularly is the experience in the Philadelphia Hospital for Contagious Diseases convincing: when the compulsory immunization was stopped, twelve cases of scarlet fever developed in fourteen months in nurses and interns, and no case has occurred since its reintroduction. If for three years we are able to immunize children of preschool and school age and if it is granted that the immunization will hold in most cases for several years longer, then we are performing a big public health measure. We are tiding these children over the susceptible period. I consider it an insistent public health measure.

TREATMENT, MODIFICATION AND PREVENTION OF MEASLES BY USE OF IMMUNE GLOBULIN (HUMAN)

IRVING M. LEVITAS, M.D.
WESTWOOD, N. J.

The use of Immune Globulin (Human) in the modification of measles has been known for a considerable period. McKhann and Chu [1] gave doses of from 5 to 6 cc. to forty-two children who were exposed to the disease. Of this number, thirty-seven were completely protected and in five mild modified measles developed. Whether the child was protected or modified measles developed depended on the number of days of incubation that had elapsed prior to injection of the extract. These cases were all in an institution. There has been little in the literature concerning the treatment of fully developed measles through the use of Immune Globulin (Human). It is part of my purpose in this paper to show the very definite therapeutic value of Immune Globulin (Human) in treatment of well developed cases of measles.

MODE OF PREPARATION AND STANDARDIZATION OF IMMUNE GLOBULIN (HUMAN)

The preparation used in these cases was Lederle's product known as Immune Globulin (Human). It is prepared and standardized in the following manner: Under the regulation of the National Institute, placentas are selected from healthy white women with negative Wassermann and Kahn tests. The cord blood must show a negative Wassermann reaction on test. The placentas are ground in a meat chopper and extracted with saline solution. The saline extract, free from tissue and blood cells, is mixed with ammonium sulphate in half saturated solution, which precipitates the globulins that contain the protective antibodies. This precipitate is collected and dissolved in water, and the salts are removed by dialysis. The final filtrate is concentrated so that it contains about 12 mg. of protein nitrogen per cubic centimeter. The final fluid, containing phenol as a preservative, is filtered for sterilization through a Berkefeld filter and represents the product known as Immune Globulin (Human).[2]

IMMUNE GLOBULIN (HUMAN) IN THE ACTUAL TREATMENT OF MEASLES

There are in this series twenty-eight cases of measles treated with Immune Globulin (Human). As they were all in private practice, and not just an experimental group, only about one fourth of the total number of patients who were observed during the epidemic of December 1934 to April 1935 were given the extract. The cases were selected mainly for two conditions: (1) cough and (2) toxicity. The first symptom was one that was easy to evaluate as to intensity, while the second presented a difficult problem as to measurement. It was in the cases of a severe, dry, irritating, racking cough that the results were very satisfactory. The dose was arbitrarily placed at from 1 to 2 cc. Of the twenty-eight cases treated, twenty-five responded favorably. Three cases showed no particular effect, but the extract in these cases was given at an earlier time than in those in which relief was gained through its use. All injections were given intramuscularly in the buttocks.

CASE 2.—A girl, aged 6 years, with an oral temperature of 104 F. and a rash present on the face, had been coughing incessantly for twenty-four hours and had been unable to sleep because of it. The cough was unproductive, brassy and very racking. One cubic centimeter of the preparation was given about 2 p. m. During the evening the mother noticed that the temperature was high, but the cough became easier and less frequent. The next morning the rash was out fully and the temperature was normal. The cough had changed in character to a slight, nonirritating, loose cough and was not especially frequent.

CASE 7.—A boy, aged 12 years, when first seen had a rash on the face and an oral temperature of 104 F. The child was very miserable, mainly because of the severe, dry, hacking cough. The mother stated that he had been coughing almost incessantly for the past four days and had had but little sleep. The patient complained of soreness of the abdominal muscles as a result of it. One cubic centimeter of the preparation was given. That evening, about three hours following its use, the mother stated that the temperature seemed very high but that the cough subsided and the patient slept the whole night. The next morning the temperature was 102 F., the rash was out heavily on the body, but the cough was loose and nonirritating and the child was comfortable. The following day the temperature was normal.

CASE 20.—A girl, aged 6 years, when seen in the afternoon, had a rash on the face and body, and the oral temperature was 103 F. The child had a dry, irritating, hacking cough and had slept poorly for the past three nights. One cubic centimeter of the preparation was given. Five hours later the temperature was 104.5 orally. This was easily controlled with acetylsalicylic acid, 5 grains (0.3 Gm.). The child slept the entire night with the exception of occasional requests for a drink of water. The next day the cough was loose and nonirritating; the patient was comfortable in spite of a fever of 102.5 F. The appetite was fair and she was much less toxic. The following day the temperature was normal.

CASE 21.—A boy, aged 9 years, had a rash on the face and an oral temperature of 103 F. There was a severe, dry cough

---

From the Department of Pediatrics, Hackensack Hospital, Hackensack, N. J.

A preliminary report of the Council on Pharmacy and Chemistry on Immune Globulin (Human) appears in this issue of THE JOURNAL.—ED.

1. McKhann, C. F., and Chu, T. F.: Use of Placental Extract in Prevention and Modification of Measles, Am. J. Dis. Child. 45: 475 (March) 1933.

2. Coca, A. F.: Personal communication to the author.

that had been present for three days. I had seen the patient the day before, but the mother had refused to allow the use of the preparation. However, she called the next day because the child was still coughing severely, and as a result he had not slept during the night and he had vomited frequently as well. Cough syrups were of no avail. Two cubic centimeters of the preparation was given and five hours later the temperature was 105 F. orally. This was easily controlled with acetylsalicylic acid and an alcohol sponge. The cough had already decreased and the child was more comfortable. The next day the cough had almost ceased and the mother expressed the wish that she had permitted its use earlier.

CASE 5.—A boy, aged 8 years, had a rash on the face and a very severe cough. Two cubic centimeters of the extract was given and the next day the cough had practically ceased. This case was especially interesting because the patient had been brought to my office the night before with the complaint of having had a dry, hacking cough for three days. The child had an oral temperature of 101 F., and there was considerable nasal and pharyngeal congestion. No Koplik spots were noted and, as it was early in the epidemic, measles was not suspected. A tentative diagnosis of acute sinusitis was made and treatment given accordingly. The next day the mother called and stated that a slight measles-like eruption had appeared on the face, the cough was still bad, and the child had hardly slept during the night. Two cubic centimeters of the preparation gave relief from the cough in three or four hours.

CASE 25.—A boy, aged 9 years, had been sick for about eight days with what appeared to be a scarlet fever-like eruption. This case was probably one of dual infection. Streptococcus haemolyticus was obtained in cultures from the throat. For the last four days he had been very toxic and there was a scarlatiniform eruption on the body and arms. Angina was not severe. A severe dry cough then developed, which was unresponsive to all types of medication, including cough syrups and throat lozenges. Koplik spots were then noted and the next day a typical measles rash appeared on the face. In view of these facts, the dual nature of the infection was taken into consideration and 2 cc. of Immune Globulin (Human) was given. The cough turned within a few hours to a tolerable one and solved a very difficult problem. The next day the rash progressed, and the patient had a typical measles course superimposed on the streptococcic infection.

There were three cases in which no particular benefit was observed. These patients were all given 2 cc. of the preparation on the first day of the prodromal symptoms. There was only a slight temperature rise, and respiratory symptoms were practically nil. They continued on their regular course apparently unaffected. It is probable that there are few or no immune bodies during the early course of the disease and that the anti-

TABLE 1.—*Results with Immune Globulin (Human) in Eighteen Cases*

Developed mild modified measles	13
Uninfluenced, developed regular measles	3
Completely protected	2

bodies given at this stage through the use of this agent are not sufficient to influence the symptoms. Later in the course of the disease, at the end of the prodromal symptoms, enough immune reaction has occurred so that, with the added benefit of Immune Globulin (Human), enough antibodies are present to aid in the subsidence of symptoms. In this series of cases, doses of from 1 to 2 cc. were used, and it is probable that larger doses given at this stage would help materially.

Febrile Reaction in Treatment.—The febrile reaction following the use of the preparation in treatment usually reached a peak of from 104 to 105 F. rectally. This was not accurately measured, since in private cases it was not possible to do so satisfactorily. However, there were no reactions that gave any undue alarm, and the temperature when too high was easily controlled with antipyretics and sponging, after which there was no return to the high point. It was only in those cases in which the mothers used thermometers frequently that any mention was made to the physician of hyperpyrexia. It is better from a practical standpoint not to have the mothers take the temperatures, as they do not notice any great change if they do not do so. The highest febrile point usually occurred from four to five hours following the administration of the immunizing agent.

TABLE 2.—*Results of Inoculation After Intimate and Moderate Contact*

Day of Exposure When Injected	Degree of Contact	Number of Cases	Results
1-2	Intimate	13	Modified measles
1-2	Moderate	2	Complete protection

Local Reactions.—About two hours following the injection a local soreness began, which was characterized by tenderness to touch and spasticity of the muscles over the site of the injection. No local treatment was needed, and after twenty-four hours no complaints were heard from this source. Mothers were advised as to what to expect and further warned against making an important issue out of this, as none of the children complained more than a short time.

Allergic Phenomena.—No allergic manifestations were noticed following the use of the preparation.

Summary.—1. Immune Globulin (Human) was used in the treatment of twenty-eight cases of measles in which the disease had reached the prodromal stage or the rash had appeared.

2. Results in twenty-five cases were excellent.

3. The cough was markedly influenced through the use of this agent.

4. Febrile reactions were moderate and easily controlled.

5. Local reactions were not marked, and no allergic phenomena were observed.

USE OF IMMUNE GLOBULIN (HUMAN) TO MODIFY MEASLES

There is a very definite difference between the procedure in the hospital and that in private practice in the problem of measles prevention and modification. In institutions it is more practical to attempt to stop disease because of the required quarantine and the possibility of spread to other patients and nurses. In private practice, when the children are at home, it is better to modify all cases when the children are in a good state of health. If this is done the patients will develop active immunity and therefore have protection against future attacks, whereas if the disease is prevented entirely they would probably at some later date contract measles. The reason for this is that Immune Globulin (Human) merely confers a passive immunity for from a few weeks to months. If a preventive dose is given, the next time the child has been exposed to the disease the physician may not be called until the patient has reached the stage at which it is impossible to modify the attack. The great majority of calls to patients, especially at the beginning of an epidemic, are either late in the prodromal symptoms or at the time the eruption has appeared.

In the present group, eighteen patients were given a dose of the immunizing agent in order to modify the course of the disease. The results are given in table 1.

Dosage.—In all cases the dose was 2 cc. except in the case of one infant, aged 11 months, in which 1 cc. was given with satisfactory result.

Time of Injection.—Fifteen patients were given the injection from one to two days following exposure. All cases were successfully modified with the exception of two, in which the disease did not develop at all. The extract was given at a time, except for the latter two cases, when another child was being treated in the same house for measles, and on the first visit the unaffected person was injected. The two patients in whom measles did not develop had had a moderate amount of contact through playing outdoors with a child who subsequently developed measles, but the exposure was not as severe as with those who lived intimately in the same house with a measles patient. Table 2 gives the results in those who were inoculated from one to two days following exposure.

There were three cases in which 2 cc. of extract was injected five days after exposure, and in these the results were unsatisfactory, as the course in all three was the usual, typical measles course. Another factor was that all three of these patients were in the same family and lived in cramped quarters. Karelitz and Schick [3] have shown that the degree of exposure decidedly influenced the amount of immune serum needed to gain modification. Apparently in these three cases the overwhelming amount of exposure, along with the fact that the injection was given late in the incubation period, contributed to the poor results. Therefore it is logical to conclude that under similar circumstances a larger dose of the preparation would be needed to acquire modification of the disease (table 3).

TABLE 3.—*Result in Late Inoculation*

Day of Exposure When Injected	Degree of Contact	Number of Cases	Results
5	Severe	3*	Usual measles course

* All cases in the same family.

All thirteen cases that were successfully modified had the same characteristics. These are:

1. *Incubation Period.*—This averaged about thirteen days, which was slightly longer than in the uninoculated, which ranged from about ten to eleven days. The reason for this is that the first sign of measles in these cases was the rash, and there were no prodromal symptoms as in the unprotected, shown in the accompanying chart.

2. *Prodromal Symptoms.*—These were practically nonexistent. A few cases showed a slight catarrhal condition and occasionally slight headache. The first sign of the disease in practically all cases was a slight rash, usually accompanied by a mild febrile reaction. In many cases the child was apparently normal in the morning, and the mother would suddenly notice the rash in the afternoon. This would be the first indication of the illness.

3. *Rash.*—The rash in all but two infants, aged 11 and 14 months, was slightly less than in the unmodified case. In these infants the rash was very mild, macules were widely scattered and the color was light rose. In the older children the rash was somewhat less than in the unmodified and did not appear in the same sequence. It was generalized almost immediately and reached its height by the second day from the time of appearance instead of the third or fourth day, as in those who did not receive the extract.

4. *Febrile Course.*—In the modified cases the course of the fever averaged two days and with the uninoculated patients it was approximately from four to seven days. The highest temperature in this modified group was 104.6 F. by rectum. In no case was it necessary to give antipyretics or sponging because of fever. Table 4 shows the highest febrile reaction for each day in the thirteen cases.

TABLE 4.—*The Febrile Reaction in Thirteen Cases*

Patient*	Age	Days of Fever	Highest Fever		
			First Day	Second Day	Third Day
1	11 months	2	102.5	100.3	Normal
2	21 months	2	103.4	104.6	Normal
3	14 months	3	102.0	101.0	100.0
4	5 years	2	102.3	101.0	Normal
5	7 years	2	102.0	101.0	Normal
6	2½ years	2	102.0	101.3	Normal
7	5 years	1	104.0	Normal	Normal
8	5 years	1	103.0	Normal	Normal
9	3 years	2	101.0	103.0	Normal
10	2 years	2	101.0	101.0	Normal
11	2 years	2	101.0	101.0	Normal
12	3 years	2	101.0	103.0	Normal
13	6 years	2	100.2	101.3	Normal

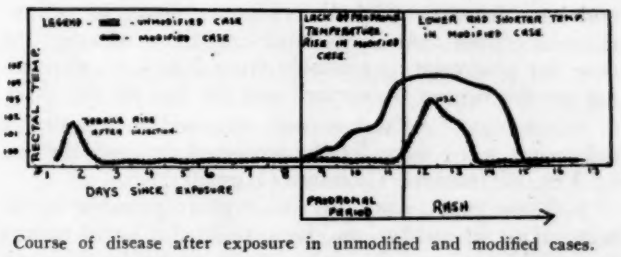
* Patients 7 and 8 and patients 10 and 11 are similar twins. All temperatures recorded were rectal.

5. *Coryzal Symptoms.*—Coryzal symptoms were all mild with varying intensity in each case. The cough, which in this epidemic was particularly distressing, was in these cases nonirritating and loose and did not require medication. Conjunctival and nasal symptoms were inconsequential.

6. *Toxicity.*—There was practically no degree of toxicity. All the children were lively and difficult to keep in bed or at rest, and their appetites were good throughout; in fact, they were no more uncomfortable than they would have been with an infection of the upper respiratory tract of mild intensity.

7. *Allergic Phenomena.*—There was no evidence of any allergic manifestations at any time.

8. *Complications.*—In case 2 left otitis media developed three days following a normal temperature. The measles course had been very mild. In case 12 slight cervical adenitis developed on the left side, with which there was no febrile reaction.



Course of disease after exposure in unmodified and modified cases.

9. *Febrile Reaction Following Injection.*—A series of twelve patients under observation in a hospital ward were given 2 cc. of Immune Globulin (Human). Temperatures taken every four hours rectally showed an average maximum temperature rise to 103 F., which took place about six hours after injection. Therefore, on the average, the febrile reaction occurred on the day of injection and was gone the next morning. There was a moderate degree of malaise, anorexia and occa-

3. Karelitz, Samuel, and Schick, Bela: Epidemiologic Factors in Measles Prophylaxis, J. A. M. A. **104**: 991 (March 23) 1935.

sionally slight nausea. These symptoms disappeared with the subsidence of fever.

10. *Local Reaction.*—There was considerable soreness the first day at the site of injection. By the next day it had decreased and was not a factor for complaint, the children being up and playing about without any especial discomfort. At present, considerable work is being done to attempt to alleviate both the local and the febrile reactions. However, in doses of from 1 to 2 cc. the reaction was hardly more than annoying, and as long as the parents were advised of it beforehand there was no undue alarm on their part.

Summary.—1. Injections of 2 cc. caused modified measles in thirteen out of eighteen cases.

2. Three cases were not successful and ran the usual measles course, as in these the inoculation was made the fifth day following exposure and the contact was extremely severe.

3. Two cases were completely protected by 2 cc. of extract. Exposure was only moderate.

4. In all patients who lived in the same household with another child who had measles, the disease subsequently developed.

5. All symptoms were extremely mild in the modified cases.

USE OF IMMUNE GLOBULIN (HUMAN) FOR PREVENTION OF MEASLES

There were twelve patients in the ward of Hackensack Hospital when a case of measles broke out in a child after having been in the ward for two days. Each child was given 3 cc. of Immune Globulin (Human) to prevent the disease. No children came down with measles. The intimacy of contact was the usual ward type, as none of the children were ambulatory. The nearest bed to the affected child was about 3 feet distant. It is logical to assume that the three or four children nearest the infected child would be most likely to develop the disease, and the ones farthest away would not be as likely to do so. Because of this factor, reports of protection of numbers of children in hospitals are not reliable, as the degree of contact is at times very slight and children far removed from the sick child are probably not exposed. More reliable work of this type can be done in homes, where the actual contact is definite and intimate. The value of complete protection in the hospital wards is great, and here Immune Globulin (Human) may be advantageously used. As 2 cc. causes modified measles, the dose for protection is probably from 3 to 4 cc., depending on the degree of contact and the age of the child.

Summary.—1. Twelve cases exposed to measles in a hospital ward were totally protected through the use of 3 cc. of Immune Globulin (Human).

2. More exact work of this type is possible in the home than in institutions, because in the latter only a few children near the patient are probably exposed. Therefore, case reports of large numbers protected in institutions are probably unreliable.

CONCLUSIONS

1. Immune Globulin (Human) is of definite value in treatment, modification and protection against measles.

2. It is easily given, the stock is standard, and the dose is small.

3. It is of especial value in young infants, in whom the disease carries high morbidity and mortality.

388 Kinderkamack Road.

UVEOPAROTITIS

SAMUEL J. COHEN, M.D.
AND
MEYER A. RABINOWITZ, M.D.
BROOKLYN

We have reviewed the recorded cases of the combination of uveitis and parotitis, either with or without the presence of nerve palsies or skin eruptions, and have found that about sixty-five such cases have been reported. Five such reports appeared in the American literature and the rest were described in the journals of foreign countries, particularly the Scandinavian. The rarity of the subject justifies the report of an additional case as well as the attempt to describe and discuss briefly the course and manifestations of such an entity. We have noted also that the majority of these cases have been reported by ophthalmologists in their special journals; but, since this type of case is often encountered by the internist, a discussion of the syndrome from the medical clinician's point of view is warranted.

REPORT OF CASE

A Jewish housewife, aged 34, was referred to the medical ward of the hospital by the ophthalmologist Dr. Isaac D. Kruskal, Jan. 31, 1934. Three months prior to admission she came to the outpatient clinic because of tiredness, nervousness, pains in the legs and weakness of about one year's duration. Two or three months before, "blotches" appeared on both lower extremities. At that time both lower extremities were found to be covered with a rash, which was blotchy, reticulated, red and slightly elevated, but not tender or painful. Early in December 1933 the rash started to fade. In November 1933 she had a sensation of having "gray threads" before the eyes, misty vision, difficulty in discerning distant objects and swelling of the upper eyelids. Soon the left side of the face swelled and in a few days similar swelling of the other side of the face developed. These swellings began to subside about the middle of December.

As a child the patient had whooping cough, chickenpox and measles. She was always subject to head colds, lacrimation and sneezing and for the past fifteen years had taken rhinitis tablets. Her habits were normal. She had never had a chronic cough, hemoptysis or night sweats. The family history was devoid of any taint of chronic or infectious ailments, except that her mother was suffering from diabetes and a sister was subject to repeated attacks of urticaria. The patient married at the age of 23 and had two healthy children. Her husband was well.

On examination it was noted that she was well developed but slightly pale. The eyelids were somewhat reddened and swollen. The pupils reacted very sluggishly. There was a faint ciliary injection; many spots were noted on the posterior surface of the corneas; the vitreous was hazy. Both parotid glands were enlarged and small shotty lumps could be felt therein. In the right supraclavicular region, near the median insertion of the sternocleidomastoid muscle, there was a gland the size of a hazelnut, not adherent and not tender. The heart and lungs showed no gross abnormalities. The spleen was felt just below the costal margin. Over the anterior aspects of the arms and legs there was noted a fading blotchy erythema not tender or elevated.

The urine examination showed no abnormal elements. The fasting blood sugar value was 120 mg. per hundred cubic centimeters and following a dextrose tolerance test of 100 Gm. the value rose to 230 mg. at the end of one-half hour, 188 mg. at the end of one hour and 145 mg. at the end of two hours. The urine contained sugar in the half-hour and the hour specimens. Examination of the blood showed: hemoglobin, 75 per cent (Dare); erythrocytes, 4,200,000; leukocytes, 7,100; polymorphonuclears, 67 per cent; lymphocytes, 24 per cent; eosinophils, 6 per cent, and basophils, 3 per cent. The sedimentation rate of the erythrocytes was ninety minutes for 18 mm. The Was-

From the medical service of Dr. Meyer A. Rabinowitz, Jewish Hospital.

sermann and Kahn reactions of the blood were negative. The tuberculin intradermal skin reaction was negative with 0.1, 1 and 5 mg. A roentgenogram of the chest showed tumefaction of the nodes at both lung roots. The pulmonary structure itself was clear except for an area of productive pleuritis on the right side, where there was an annular shadow opposite the level of the third rib anteriorly. The interpretation of the roentgenologist (Dr. M. G. Wasch) read as follows: "I do not believe an active pulmonary Koch process is present; the condition impresses me as most likely that of a lymphoid tumefaction."

The gland from the right supraclavicular area was excised, and on section it showed a homogeneous grayish appearance with a smooth firm surface. Microscopically it showed the lymph follicles to have been replaced by large masses of epithelioid tissue, there remaining but a narrow rim of lymphocytes. Many of these tubercles contained horseshoe giant cells. Tubercle bacilli were not found.

The temperature ranged between 99.2 and 100.8 F. After a stay of three weeks in the hospital there was no appreciable improvement in any of the signs or symptoms, and the patient was discharged.

Heerfordt [1] is to be credited with the recognition and the naming of the syndrome, although such cases were described prior to his publication. Subsequent writers have attempted to augment or change the nomenclature by attaching to it an anatomic or an etiologic term, but since the causative agent is as yet not established beyond a doubt, we suggest that the original nomenclature be used until the real etiologic agent is discovered. This illness affects females more frequently than males and is more commonly encountered in the third decade, but children and older adults are not exempt.

Signs and Symptoms.—Preceding the appearance of the signs and symptoms which typify this disease, the patient often experiences dryness of the mouth, malaise, lassitude, drowsiness, weakness, night sweats, anorexia, nausea and vomiting. Of course, such prodromal symptoms do not characterize this syndrome alone, as they often precede many other ailments. Such symptoms may last several weeks or months before the systems characterizing this syndrome become involved. There is a lack of regularity in the order of the appearance of the signs and symptoms which go to make up this disease entity; not all the systems are necessarily always involved. The facial palsy, neuritis and the skin rash are not found in every case, but the parotitis and uveitis are encountered in all the instances and therefore characterize this syndrome.

Parotid Involvement: The parotid glands are usually the first to become involved. At first one gland swells, and this is soon followed by a swelling of the opposite gland. Both parotid glands are always affected. We take exception to the statement of Garland and Thomson [2] that in two of the recorded cases there was unilateral enlargement, Müller's [3] case and the case of Critchley and Phillips.[4] The former case can hardly be placed in the category of this syndrome, and in the latter case the patient did in fact present a bilateral parotid swelling. The parotid gland is hard, not painful or tender, shotty and not adherent. It never suppurates, although the swelling may last several months or years before it subsides. Long after the disappearance of any visible swelling, small shotty-like nodules persist for a long time.

Lymphoid Tissue Involvement: The submaxillary, cervical, sublingual and very often the supraclavicular glands are found to be enlarged but not tender. They do not suppurate but ultimately resolve.

Ocular Involvement: Without exception the eyes are always involved in this disease, although in the majority of cases this follows the parotid involvement. Here, too, one eye is involved first, but both are ultimately affected. The patient at first complains of misty vision, as if specks of dust or threads were in front of the eyes. Pain in the eyeballs is an early symptom, and there is an inability to discern distant objects. The pupils become irregular and dilated and often do not react to light. Keratitis, ciliary congestion and nodules in the iris appear, and the vitreous shows opacities. Synechiae, optic neuritis and atrophy often result in permanent visual defects even though some of the other eye signs may subside. The palpebral fissures are narrowed and pseudoptosis may be present.

Nerve Involvement: Facial palsies are the most common nerve disturbances encountered, and they are found in about one third of the cases reported; in less than half of them it is bilateral. One side of the face is involved at a time; as the affected side subsides, the opposite side becomes paralyzed. The palsy may precede, follow or appear simultaneously with the swelling of the parotid glands. It usually lasts several weeks but may endure as long as a year. It subsides, leaving no trace of muscle weakness. Occasionally the paralysis will recur. Milder involvements of the nervous system, such as polyneuritis, paresthesias, intercostal neuralgias, ptosis of the lids, dysphagia and paralysis of the soft palate and vocal cords, are occasionally seen.

Skin Involvement: A rash may appear on the anterior surface of the body, arms or legs before or during systemic involvement. It is an erythema resembling a toxic erythema or an erythema nodosum, flat or slightly elevated. It is not painful to touch, does not itch and lasts but a few weeks.

Fever: The temperature may or may not be elevated and when it is, there is only a low fever. In some cases it may reach 103 F. The fever may also continue throughout the course of the illness, but it does not cause the patient any great degree of discomfort.

Laboratory Data.—The urine shows no abnormality. A slight anemia may be present, though it is not characteristic of this disease. An eosinophilia of from 3 to 20 per cent is usually found, but the total number of leukocytes is not necessarily increased or diminished. The bacteriologic examination of the parotid secretion and the conjunctiva shows no specific organism, but the usual flora. The histopathology of this disease is as yet not definite, because too few biopsy examinations of the involved tissues have been made. There were three deaths in this series and they were due to miliary tuberculosis. The excised lymph glands showed epithelioid and giant cells, but no caseation or tubercle bacilli. The lacrimal gland tissue resembled a lymphoma. The parotid gland showed no tubercle bacilli, giant cells or caseation. Further and more detailed studies are necessary to establish the specific tissue reaction of this disease as well as the identity of its exciting agent.

Etiology.—There are many controversial opinions regarding the etiology of uveoparotitis. Some authors state that the syndrome is produced by the tubercle

1. Heerfordt, C. F.: Ueber eine "Febris Uveoparotidea subchronica," an der Glandula parotis und der Uvea des Auges lokaliziert und haufig mit Paresen cerebrospinaler Nerven kompliziert, Arch. f. Ophth. **70**: 254, 1909.
2. Garland, H. G., and Thomson, J. G.: Uveoparotid Tuberculosis, Quart. J. Med. **2**: 157 (April) 1933.
3. Müller, M.: Bemerkungen zu der Arbeit von H. Rieth über Iridozyklitis bei Parotitis epidemica und anderen Speicheldrüsenschellungen und über ihre Beziehungen zur Tuberkulose, Klin. Monatsbl. f. Augenh. **64**: 387, 1920.
4. Critchley, M., and Phillips, P.: A Case of Uveoparotitic Paralysis, Lancet **2**: 906 (Nov. 1) 1924.

bacillus. Thus, in one of Bang's [5] cases, the case of Souter [6] and the case of Garland and Thomson [2] miliary tuberculosis was found at postmortem examination. Uhthoff [7] felt that his patient's ailment was due to tuberculosis because he found positive physical signs at the left apex of the lung. Lehmann [8] reviewed twelve cases of uveoparotitis and in only three cases did she find signs suggestive of tuberculosis. Gjessing [9] thought that this disease is a peculiar reaction form of tuberculosis. Schall [10] maintained that the etiology is tuberculous, basing his opinion on the fact that his patient recovered following tuberculin therapy, but his patient showed no evidence of a tuberculous infection anywhere. Reimers [11] reasoned likewise and Roenne [12] stated that the etiology is undoubtedly tuberculous. Cavara [13] concluded that the disease is a special form of tuberculosis, although inoculations of parotid tissue into the rabbit and guinea-pig were negative to tuberculosis. Reimers [11] examined the parotid gland in his case and it showed no giant cells or caseation. Lehmann's [8] patient showed epithelioid and giant cells but no caseation or tubercle bacilli. Weve [14] injected parotid gland tissue from his patient into the anterior chamber of the rabbit's eye, but the microscopic examination showed no evidence of tuberculosis. Van der Hoeve discussed Weve's paper and expressed the belief that the disease might be due to a healed form of tuberculosis. One year later Weve [15] expressed the opinion that this might be a form of paratuberculosis. Tanner and McCurry [16] recently reported three cases of uveoparotitis; one patient had suffered from pulmonary tuberculosis, but the two others were completely free from such an infection. Leeksma [17] felt that this disease is but a complication of mumps, although Heerfordt [1] and McKaig and Woltman [18] showed the lack of a relationship between the two. Hamburger and Schaffer [19] thought that this is a variety of the Mikulicz syndrome. Mackay [20] felt that this is an infection secondary to a mouth infection. MacBride [21] was of the opinion that the nature of this disease is toxic or toxi-infective. Parker [22] considered this to be an infective multiple neuritis. Ramsay [23] considered it to be a form of deficiency disease. Altland,[24] however, believed that the etiology is as yet unknown.

Prognosis.—While the mortality is low, there being recorded but three deaths, the morbidity is high. The involvement of the uveal tract often results in permanent visual defects. The other systems involved clear up completely.

Treatment.—Many methods of treatment have been employed, the results being as good with one form as they are with another. The tuberculin treatment is particularly advocated by the ophthalmologist. Cutler [25] used inorganic arsenic, Jackson,[26] Lerner [27] and Hamburger and Schaffer [19] used radiotherapy, and Ramsay [23] administered thyroid extract. It is apparent that there is no specific form of treatment, and since the greater number of cases cleared up, it is reasonable to assume that this disease is self limited. Treatment should therefore be directed toward maintaining the nutrition and resistance of the patient. General hygienic measures are in order. Foreign protein therapy, we believe, is indicated.

COMMENT

That this syndrome constitutes a well defined clinical entity is now beyond any doubt; its etiology, however, is still in controversy. The promulgators of the tuberculosis theory failed to supply sufficient solid proof to justify their conclusions. It is true that pulmonary tuberculosis was found in one case and miliary tuberculosis in three others, yet in the majority of the recorded cases no indisputable clinical or pathologic evidences of tuberculosis were shown. A diagnosis of uveal tuberculosis requires proof of the presence of a primary focus,[28] yet no such positive proof is available. Tubercle formation with a central giant cell and surrounding mononuclear phagocytes is a tissue reaction that can be caused by organisms other than the tubercle bacillus. The tuberculous patient is tuberculin sensitive except under conditions of massive tuberculous infection, but it must be conceded that the patients in this series had no massive infection, if at all infected, it was mildly, and yet the tuberculin reactions were negative in the majority of instances; in the cases in which the tubercle bacillus was demonstrated, the reaction was positive. Furthermore, microscopic evidence of tuberculosis in either a biopsy or an animal inoculation was never proved. This condition is also readily differentiated from mumps not alone because of the chronicity of the former and the acute course of the latter, but because this disease occurred in persons who had had mumps before. It is difficult to conceive that this entity even resembles the Mikulicz syndrome or that it is a deficiency disease, but we are confronted with the frequent finding of eosinophilia and a skin rash, which are likely to be evidences of an allergic state. This allergic state is not caused by the tubercle bacillus, because the tuberculin reactions in these cases were negative. Therefore,

5. Bang, S., quoted by Garland, H. G., and Thomson, J. G.: Quart. J. Med. **2**: 157 (April) 1933.
6. Souter, W. C.: A Case of Uveoparotid Fever with Autopsy Findings, Tr. Ophth. Soc. U. Kingdom **49**: 113, 1929.
7. Uhthoff, W.: Ein Fall von geheilter tuberkuloser Meningitis mit doppelseitiger Iridochoroiditis tuberculosa, Klin. Monatsbl. f. Augenh. **50**: 474, 1912.
8. Lehmann, K.: Chronic Bilateral Febrile Uveitis and Parotitis With or Without Facial Paralysis, Hospitalstid. **54**: 137 (Feb.) 1916; abstr. J. A. M. A. **66**: 1066 (April 1) 1916.
9. Gjessing, H.: Ueber Tuberkulose als Aetiologie bei der sog. Febris uveoparotidea (Heerfordt), Klin. Monatsbl. f. Augenh. **60**: 249, 1918.
10. Schall, E.: Beitrag zur Aetiologie der Uveoparotitis subchronica, Klin. Monatsbl. f. Augenh. **70**: 350, 1923.
11. Reimers, O.: Ueber einen Fall von Febris uveoparotidea und über die Beziehungen zur Tuberkulose, Ztschr. f. Augenh. **60**: 30, 1926.
12. Roenne, H.: Ueber Febris uveoparotidea, Klin. Monatsbl. f. Augenh. **81**: 524, 1928.
13. Cavara, V., quoted by Garland, H. G., and Thomson, J. G.: Quart. J. Med. **2**: 157 (April) 1933.
14. Weve, H. J. M.: Familiare pseudotuberkulose symmetrische Entzündung der Speichel und Tranendrusen und der Uvea, Ztschr. f. Augenh. **60**: 68, 1926.
15. Weve, H. J. M.: Familiare Uveoparotitis unbekannten Ursprungs, Klin. Monatsbl. f. Augenh. **78**: 83, 1927.
16. Tanner, S. E., and McCurry, A. L.: Uveoparotid Tuberculosis, Brit. M. J. **2**: 1041 (Dec. 8) 1934.
17. Leeksma, H. W.: Uveoparotid Fever, Nederl. tijdschr. v. geneesk. **2**: 1126, 1916; abstr. Lancet **1**: 28 (Jan. 6) 1917.
18. McKaig, C. B., and Woltman, H. W.: Neurologic Complications of Epidemic Parotitis, Arch. Neurol. & Psychiat. **31**: 794 (April) 1934.
19. Hamburger, L. P., and Schaffer, A. J.: Uveoparotid Fever as a Manifestation of Mikulicz's Syndrome, Am. J. Dis. Child. **36**: 434 (Sept.) 1928.
20. Mackay, G.: A Case of Uveoparotitis with Iridocycloplegia, Tr. Ophth. Soc. U. Kingdom **37**: 208, 1917.
21. MacBride, H. J.: Uveoparotitic Paralysis, J. Neurol. & Psychopath. **4**: 242 (Nov.) 1923.
22. Parker, G.: Uveoparotitic Paralysis, Bristol Med.-Chir. J. **43**: 73, 1926.
23. Ramsay, A. M.: Diseases of the Uveal Tract, Tr. Ophth. Soc. U. Kingdom **41**: 194, 1921.
24. Altland-Duisburg: Febris Uveoparotidea, Ztschr. f. Augenh. **53**: 113, 1924.
25. Cutler, C. W.: Symmetrical Enlargement of the Parotid and Lachrymal Glands, Nodular Iritis, Tr. Am. Ophth. Soc. **10**: 390, 1904.
26. Jackson, B. H.: Use of X-Ray in Uveoparotitis, Am. J. Ophth. **8**: 361 (May) 1925.
27. Lerner, M. L.: Uveitis, Ideology, Pathogenesis; Its Relation to Other Parts of the Body, Varieties of Uveitis, Clinical Subdivisions and Pathological and Anatomic Classifications, New York State J. Med. **24**: 597 (April 18) 1924.
28. Lagrange, H.: The Diagnosis of Iridociliary Tuberculosis, Brit. J. Ophth. **17**: 679 (Nov.) 1933.

it is quite likely that this syndrome is produced by an organism as yet not isolated, which produces a low grade infection in a sensitized individual and runs a slow course with a spontaneous termination.

SUMMARY AND CONCLUSION

1. No definite etiologic factor appears to be responsible for uveoparotitis and its syndrome.
2. Further search for the causative agent or agents is necessary.
3. The disease is chronic and self limiting.
4. The only permanent morbidity of this illness is visual impairment.
5. Since this disease is chronic and possibly infectious, foreign protein therapy is suggested.

1689 Union Street.

THE SIGNIFICANCE OF PYURIA IN CHILDREN

ALEXANDER B. HEPLER, M.D.
SEATTLE
AND
RUSSELL T. SCOTT, M.D.
LEWISTON, IDAHO

Within recent years there has been a growing recognition of the importance of a complete urologic examination in infants and children when there is presumptive evidence of urinary tract disease. This increasing application of modern diagnostic methods to urologic conditions in children has established a number of facts, the most important of which are that (1) congenital narrowings of the caliber of the urinary tract, chiefly at the points of normal anatomic narrowing, are very common, and congenital obstruction is an important factor in urinary diseases both in children and in adults; (2) chronic infections are usually secondary to or are perpetuated by these obstructions, and a chronic or recurrent pyuria almost invariably indicates some anatomic defect, and (3) urinary tract diseases in children are often obscured by symptoms pointing to other conditions, frequently gastro-intestinal, and the examiner must be on the alert for presumptive evidence of urinary disease or it will be missed.

Infants and children do not localize their subjective symptoms, and many of the lesions are "silent," in that they do not give symptoms. Attention is usually called to the urinary tract by the presence of pus in the urine. Pyuria is the most important sign of urogenital disease in children.

The question then arises What constitutes a pyuria of clinical importance and what is its significance when it is encountered in an ordinary routine examination? These questions are instigated by the fact that there is a tendency among pediatricians to evaluate its importance on the quantitative basis and to conclude that a few pus cells are normal or indicate contamination and that a large amount point to infection of the urinary tract.

One frequently hears the remark that there is a small amount of pus in the urine but not enough to mean anything. The general standard of a normal limit seems to be from 6 to 8 pus cells per high dry field. No qualifications are made as to the method of collection or examination. Since pus cells are never a normal constituent of the urine, it is to be inferred that pus in this amount is taken to be contamination and if over this to indicate disease. The fallacy of such an assumption is obvious.

However, a review of the literature gives the same impression. Eisendrath [1] says that "one finds five to seven leukocytes to the high dry field in the urine of normal children." The method of examination is not mentioned or the basis for this conclusion. Jarrell,[2] in an article on pyelitis in infancy, says that, "if there are as many as ten leukocytes to the field, a diagnosis of pyelitis may be made." The method of collection or examination is not mentioned. Smith [3] concludes that the diagnosis of pyuria is justified only when the number of white blood corpuscles is considerable, at least 8 to 10 per high dry field, but does not say whether in the catheterized or voided specimen, nor does he give any reason for this arbitrary limit of 10 cells. Ramsey [4] gives as a standard to warrant a diagnosis of pyelitis or pyelocystitis "colon bacilli in numbers and pus cells to exceed ten to the field" in the catheterized, uncentrifugated specimen. Helmholz [5] feels that the presence of a small amount of pus in the urine has been overemphasized in the diagnosis of pyelitis. He gives as a normal "in the uncentrifugated urine from boys obtained with ordinary precaution, two or three pus cells per low power field, and in the urine from girls, not more than six or eight cells." He does not state the basis for these figures.

METHOD OF EXAMINATION

There has been no systematic study reported either to confirm or to refute these assumptions. To find out whether there was any basis for them and to throw some light on this subject, we studied all the patients admitted to the Children's Orthopedic Hospital for a period of nine months, March 1931 to January 1932, in the manner outlined in table 1.

On admission, a voided specimen of urine centrifugated and uncentrifugated was examined. If there was pus in any amount the patient was catheterized, and centrifugated and uncentrifugated specimens were examined. If pus was found, the patient's history was checked carefully for urinary symptoms, a plain roentgenogram taken, a combined phenolsulphonthalein function determined and a complete cystoscopic examination done, including pyelo-ureterograms or excretory urograms. Even though no pus was found in the catheterized specimen, the patient's history was carefully checked for urinary symptoms either past or present, and if positive the child was observed or a complete renal study made. This was not done with the idea of establishing or recommending a routine method of examination but simply to find out what pyuria in children means under all conditions.

VARIATIONS IN THE VOIDED AND THE CATHETERIZED SPECIMENS

In this manner the urines of 694 children (400 males, 294 females) were examined during the nine months from March 1931 to January 1932. The oldest child was 16 years of age and the youngest 24 hours, with an average age incidence of 7.2 years. Pus was found in the voided centrifugated specimens of 687 children, or 99 per cent, in the amounts noted in table 2; in the

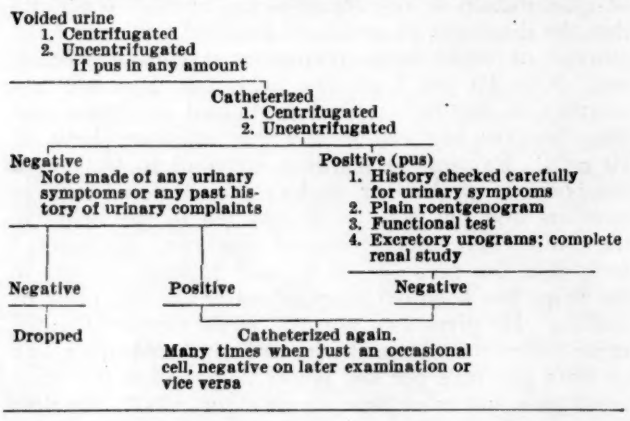
From the Children's Orthopedic Hospital, Seattle.

1. Eisendrath, D. N.: J. Indiana M. A. **20**: 287 (Aug. 15) 1927.
2. Jarrell, K. M.: West Virginia M. Monthly **26**: 550 (Sept.) 1930.
3. Smith, R. M.: New England J. Med. **205**: 181 (July 23) 1931.
4. Ramsey, W. R.: Acute Infections of the Urinary Tract in Infants and Children Subsiding Without the Appearance of Pus in the Urine, Am. J. Dis. Child. **24**: 218 (Aug.) 1922.
5. Helmholz, H. F.: Journal-Lancet **50**: 131 (March 15) 1930.

voided uncentrifugated in 246, or 36 per cent; in the catheterized centrifugated in ninety-nine, or 13 per cent, and in the catheterized uncentrifugated in sixty-four, or 9 per cent.

It is obvious from this that the term pyuria may vary considerably in its meaning if it is used in the sense of pus in the urine in any amount, regardless of the method of obtaining and examining the specimen.

TABLE 1.—*Method of Examination*



While there were 687 children with pus in the voided urine, only ninety-nine had it in the catheterized specimen. Therefore, catheterization is imperative in urinary diagnosis in children. Contamination is possible in males as well as in females (400 of the group were boys). Even if the glans and prepuce are cleansed, there may be contamination from a low grade urethritis secondary to a previous balanitis. A two glass test would eliminate this, but it is a simple matter to pass a small catheter.

So many variable factors are introduced by centrifugation, such as time and rate of spinning and method of collecting the sediment, that it is of no value in a quantitative estimation of pus.

TABLE 2.—*Quantitative Estimation of Pus Cells in the Urine of Six Hundred and Ninety-Four Children* *

	Voided		Catheterized	
	Centrifugated	Uncentrifugated	Centrifugated	Uncentrifugated
Occasional (less than 1 per high dry field)	272	148	34	27
1 to 5 per high dry field	324	73	39	18
5 to 10 per high dry field	52	12	11	10
10 to 20 per high dry field	26	10	8	7
Over 20 per high dry field	13	3	7	2
Totals	687 (99%)	246 (36%)	99 (13%)	64 (9%)

* These included 400 boys and 294 girls (oldest 16 years, youngest 24 hours, with an average age of 7.2 years) who were admitted to the Children's Orthopedic Hospital during a period of nine months, from March 1, 1931, to Jan. 1, 1932.

INCIDENCE OF URINARY TRACT DISEASE IN THE PRESENCE OF PYURIA

Following the plan of examination outlined, we found that a complete renal study was indicated in sixty-six cases. Of these, sixty-four children had pus in the catheterized uncentrifugated urine and two had none, but the histories in the latter were suggestive. Of these sixty-six children, twenty-six had demonstrable urinary tract disease, as shown in table 3.

From this it is obvious that the amount of pus in a urine properly collected is no indication either of the kind or of the severity of urinary tract disease. There were three patients with advanced infected hydronephrosis with less than 1 pus cell per high dry field, and in one with an osteovesical fistula from sclerosing osteomyelitis of the ilium there was a rare pus cell, while in another with a similar condition there were many pus cells. Fifty per cent of the twenty-six children with demonstrable urinary tract disease had pus in the urine in amounts well under what is quoted in the literature as a normal pus content.

Forty of the sixty-four patients (table 4) with pus in the catheterized uncentrifugated specimen had no demonstrable urinary tract disease, but most of them had some active extra-urinary infection. In only six of the forty was the count over 5 cells per high dry field, and three of these had acute appendicitis and two

TABLE 3.—*Incidence of Urinary Tract Disease in Sixty-Four Children with Pus in the Catheterized Specimen*

Children with Pus in the Catheterized Specimen Uncentrifugated	Number of Pus Cells per High Dry Field	Children with Demonstrable Urinary Tract Disease	Diagnosis
	0	2	1 neuromuscular dysfunction of the bladder (encephalitis) 1 hydronephrosis
27	Occasional (less than 1)	4	1 unilateral hydronephrosis 1 bilateral hydronephrosis 1 suppurative hip disease with sinus to the bladder 1 urethral cysts
18	1 to 5	7	2 neuromuscular dysfunction of the bladder (spina bifida) 1 hydronephrosis 1 acute pyelonephritis 1 urethrotrigonitis (chronic mastoiditis) 1 congenital stricture of external meatus 1 metastatic abscess of kidney with perinephric extension
10	5 to 10	4	1 acute pyelonephritis 1 chronic pyelonephritis (tuberculous spine) 1 hydronephrosis 1 congenital valves of posterior urethra (double kidney)
7	10 to 20	7	5 acute pyelonephritis 1 neuromuscular dysfunction of the bladder (spina bifida) 1 congenital cysts of posterior urethra
2	Over 20	2	1 congenital strictures ureterovesical junctions (bilateral pyonephrosis) 1 suppurative hip disease with sinus into the bladder
Total 64		26	

severe mastoiditis. It might be contended that these should be included in the cases of pyelonephritis, but the clinical evidences of pyelonephritis were absent, such as lumbar tenderness, fever and dysuria. The pyuria rapidly cleared up with the subsidence of the primary infection.

There were forty-one patients with bone or joint tuberculosis and, realizing the possible association of renal tuberculosis with these lesions, we observed them carefully during the period of this study. In none of the forty-one were we able to demonstrate tubercle bacilli after careful examination on various occasions. Only seven had pus in the urine and in none of these was there demonstrable evidence of urinary tract disease.

A large number of these children were treated by prolonged immobilization on frames and in casts. This study does not confirm the generally accepted opinion that prolonged immobilization tends to urinary stasis, infection and stone formation.

It is evident that, of sixty-four children with pus in the catheterized urine, only 37 per cent had demonstrable urinary tract disease. It might be contended that the others were unnecessarily subjected to a complete renal study. However, it is also evident from the observations recorded in table 3 that the number of pus cells is no indication either of the kind or of the degree of urinary tract disease. The necessity for a complete study is not determined by a quantitative estimation of pus. It is undoubtedly "a greater error to miss making an early diagnosis through neglect of a proper examination than to mistake the indications and unnecessarily subject the child to examination."

It must be remembered that the study included all children in the hospital during the comparatively short period of nine months. Of the twenty-six with demonstrable urinary tract disease only ten were admitted for diagnosis and treatment of a urologic condition, and only nine had subjective symptoms directly referable to the urinary tract.

TABLE 4.—*Pyuria (Catheterized Uncentrifugated) in Forty Children with no Demonstrable Urinary Tract Disease*

Number of Pus Cells per High Dry Field	Number of Cases	Diagnosis
Occasional (less than 1)	23	4 tuberculous spondylitis* 4 no diagnosis 3 osteomyelitis 2 tuberculous hip disease* 2 congenital dislocation of hip 2 scoliosis 1 congenital syphilis 1 fracture 1 appendiceal abscess 1 mastoiditis 1 mitral disease 1 infantile paralysis
1 to 5	11	2 scoliosis 2 Perthes' disease 1 osteomyelitis 1 strabismus 1 encephalitis 1 genu varum 1 tuberculous spondylitis* 1 congenital dislocation of hip 1 cleft palate
5 to 10	6	3 acute appendicitis 2 mastoiditis 1 congenital dislocation of hip
Total	40	

* In the forty-one cases of bone or joint tuberculosis in this series, the urine was examined very carefully for tubercle bacilli three different times with negative results. In seven there was pyuria (see above) but none presented any urinary symptoms nor any demonstrable urinary tract disease.

BACTERIA

The necessity for negative cultures as a criterion of cure in urinary infections in children has been emphasized by Helmholz. A study was made of the comparative value of fresh smears and cultures in determining the type of infection. One hundred and eighty-three catheterized urines were examined both by smear and by culture (table 6). Positive smears were obtained in fifty-five and positive cultures in sixty-two. There were four positive smears with negative cultures and nine positive cultures with negative smears, a total difference of thirteen. Thus, in 183 examinations the smear and culture agreed in 170, or 92 per cent. The stained smear is as valuable as the culture in routine examinations of the urine and should be used as a routine. Of the sixty-two positive cultures, there were found staphylococci alone in twenty-seven; staphylococci and B. coli in seventeen; B. coli alone in thirteen; staphylococci and streptococci in two; B. subtilis in two; staphylococci, streptococci and B. coli in one.

SUMMARY AND CONCLUSIONS

There is a tendency among pediatricians to evaluate the importance of pyuria in children on a quantitative basis and to assume that a few pus cells are normal or indicate contamination and that a large number point to urinary tract infection or disease.

Various arbitrary limits of normal are given without qualification as to the method of collection or examination. No systematic study of a large number of children has been reported that would definitely confirm or refute many of the assumptions that appear in the literature on this subject.

TABLE 5.—*Subjective Symptoms Directly Referable to the Urinary Tract*

Of the 26 Children with Urinary Tract Disease:	
10 were admitted to the hospital for diagnosis and treatment of a urologic condition	
9 presented subjective symptoms directly referable to the urinary tract	
16 were discovered because of investigation of the pyuria	
Of the 40 Cases with Pyuria (Catheterized Centrifugated) Without Demonstrable Urinary Tract Disease:	
None had subjective symptoms referable to the urinary tract	

To this end 694 infants and children were examined during a period of nine months in the Children's Orthopedic Hospital, from which study we conclude that:

1. Catheterization is imperative in urinary diagnosis in children. Ninety-nine per cent of 692 children had pus in the voided urine and only 13 per cent in the catheterized.

2. The amount of pus in a urine properly collected is no indication either of the kind or of the severity of urinary tract disease. In the twenty-four children in this group with demonstrable urinary tract disease, exactly similar lesions existed with pus counts that varied from less than 1 per high dry field to more than 20 per high dry field. Fifty per cent of the children with demonstrable urinary tract disease and a number with advanced lesions and severe infections had pus in amounts well under what is frequently set forth as a normal count.

3. If a persistent or recurrent pyuria, no matter what the cell count, is taken as a criterion for a complete renal study, a number of children will be subjected to what is apparently an unnecessary examination, for only 37 per cent of the sixty-four with pus in the catheterized specimen had demonstrable urinary tract disease. However, as can be noted in table 3, the amount of pus is no guide as to the necessity for cystoscopy. Many of the obstructive lesions are

TABLE 6.—*Comparative Value of Fresh Smears and Cultures in Determining Type of Bacteria*

183 Catheterized Specimens Examined Both by Smear and by Culture:	
Positive cultures	62
Positive smears	55
Positive smears with negative cultures	4
Positive culture with negative smears	9
In 183 examinations the smear and cultures agreed in 170, or 92%	
Organisms on Culture:	
Staphylococci alone	27
Staphylococci and B. coli	17
B. coli alone	13
Staphylococci and streptococci	2
Bacillus subtilis	2
Staphylococci, streptococci and B. coli	1
Total	62

"silent" and a few pus cells the only indication of a pathologic process, so that it is undoubtedly a "greater error to miss making an early diagnosis through neglect of proper examination than to mistake the indication and subject the child to what is apparently an unnecessary examination."

4. Many urologic lesions in children are "silent" or have misleading symptoms. Only nine of the twenty-six children in the study who were found to have urinary tract disease had subjective symptoms that were in any way referable to the urinary tract. In only ten was there any presumption of a urinary lesion. The remaining sixteen were discovered through the routine study of pyuria.

5. Urinary complications in children with bone and joint tuberculosis are not common, and prolonged immobilization on frames or in casts does not tend to urinary stasis, infection and stone formation. Forty-one of the children examined had bone or joint tuberculosis. In none were tubercle bacilli found in the urine after repeated and careful examination. Only seven had pus in the urine, and none of these had any demonstrable urinary tract disease.

6. In determining the type of organisms in 183 urines, the fresh smear and cultures agreed in 170, or 92 per cent.

752 Stimson Building.

THE ANTIDOTAL ACTION OF POTASSIUM PERMANGANATE

ROBERT A. HATCHER, M.D.
NEW YORK

Potassium permanganate was recommended as an antidote for certain poisons by Moor,[1] whose papers embrace a curious mixture of truth and error. Potassium permanganate is commonly recommended as an antidote for organic poisons in the stomach, but there is a striking divergence of opinion concerning the amount to be administered and the concentration of the solution to be used. One hesitates to cite the names of persons with reference to a common error, but a few concrete examples are desirable. Fantus[2] says:

> The nearly always fatal dose of barbital is about 10 Gm., of phenobarbital about 4 Gm. and of dial about 2.4 Gm. . . . The stomach should be washed thoroughly with diluted (pink) permanganate solution.

The color of solutions of potassium permanganate varies from lilac to deep purple, depending on the volume and the concentration, and whether viewed by transmitted or reflected light. A physician was once asked to select from among several flasks the one that contained the solution corresponding to the description "pink" just mentioned. The concentration of the solution he selected was 1:1,000,000, and the flask contained a total of 1 mg. in 1,000 cc. of water. Potassium permanganate does not destroy barbital, and, if it were active, 1 mg. would not oxidize more than 3 mg., less than a thirtieth of 1 per cent of a fatal dose of barbital.

From the Department of Pharmacology, Cornell University Medical College.
With the technical assistance of Miss Josephine St. Mary and Miss Jeanne Ossent.

1. Moor, W. O.: Permanganate of Potassium as an Antidote for Morphine, M. Rec. **45**: 200, 1894; The New Antidote for Opium Poisoning, Brit. M. J. **1**: 1369, 1895; Ueber die Behandlung der akuten Opium- und Morphiumvergiftungen mit Kalium-permanganat, Therap. Monatsh. **17**: 562, 1903.
2. Fantus, Bernard: Therapy of Barbiturate Poisoning, J. A. M. A. **103**: 749 (Sept. 8) 1934.

In contrast with that useless dose, dangerous amounts are sometimes recommended. Sydney Smith[3] said:

> Hydrocyanic Acid . . . Potassium permanganate has been shown to inhibit the action of the poison and half a liter of 3 to 5 per cent solution should be immediately administered.

The larger dose (25 Gm.) of potassium permanganate recommended by Smith (500 cc. of a 5 per cent solution) is about 25,000 times as much as that recommended by Fantus for washing the stomach in a case of barbital poisoning. Smith[4] says:

> In strong solution or in the solid state it acts as a corrosive or strong irritant, while after absorption it appears to cause paralysis of the heart. In one case about half an ounce caused death in five hours with corrosion of the mouth and pharynx. In small doses, such as 3 grains (0.2 Gm.), alarming symptoms of gastric irritation and collapse have been caused.

According to Smith, death has resulted from a little more than half of the dose that he recommended in hydrocyanic acid poisoning, and alarming symptoms of gastric irritation and collapse have resulted from less than a hundredth part of that dose. DeBusscher[5] found that an oral dose of only 100 mg. of potassium permanganate per kilogram sometimes proved fatal in dogs. This corresponds to about 6.5 Gm. (100 grains) for man, or about one fourth of the dose recommended by Smith.

Moor observed that potassium permanganate destroys an equal weight of morphine instantly, even in the presence of blood. In fact, he maintained that with blood or egg albumin it forms a compound which destroys morphine even more actively than does potassium permanganate itself. He injected morphine sulphate intravenously into a rabbit, causing a slowing of the respiration; he then injected subcutaneously into another rabbit a similar amount of morphine sulphate, followed by intravenous injections of potassium permanganate, and failed to observe any essential change in the respiration. He concluded that potassium permanganate is capable of destroying morphine in the circulation.

Moor failed to understand the difference between the effects of an intravenous and a subcutaneous injection of a given dose of morphine and the reaction that occurs in the blood. It is true that potassium permanganate destroys morphine in the blood in vitro, but morphine leaves the circulation rapidly and is fixed in the tissues, and there is no evidence that the subcutaneous injection of potassium permanganate causes the destruction of poison in the circulating blood. Moor stated correctly, however, that potassium permanganate decomposes protein slowly and that it is useful for the destruction of those poisons which it decomposes rapidly in the stomach—not for those which it decomposes more slowly than it does protein.

It is beyond the scope of this paper to give details concerning the use of potassium permanganate under varying conditions, but the following factors have been considered with reference to several poisons:

1. The rate of decomposition in acid, neutral and alkaline solutions.
2. The amount of potassium permanganate required to decompose a given weight of a substance; and, conversely, the

3. Smith, Sydney: Forensic Medicine, ed. 2, London, J. & A. Churchill, 1928, p. 418.
4. Smith: Forensic Medicine, p. 449.
5. DeBusscher, L.: Encore sur la prétendue désintoxication de la morphine à l'aide du permanganate de potassium, Arch. internat. de pharmacodyn. et de thérap. **13**: 309, 1904.

total amount of potassium permanganate that is decomposed by a given weight of a substance.

3. The effective concentration of the reagent.

4. The influence of protein, caffeine and tannin (tea and coffee) on the rate of destruction of poisons.

Potassium permanganate in tenth-normal (3.1606 Gm. to the liter) or hundredth-normal solution was used in nearly all the quantitative experiments. The disappearance of purple was the end-point for the determination of the reduction of potassium permanganate. This was fairly sharp in those experiments in which there was little interference by the color of the products of decomposition, but it was unsatisfactory in those in which turbid mixtures resulted. Some of the experiments were performed at room temperature (about 25 C., or 77 F.) some at body temperature (about 37 C., or 98.6 F.), but the rate of reaction was essentially the same.

When an excess of potassium permanganate was added to an alkaloid, the products of decomposition sometimes continued to reduce the potassium permanganate at a much slower rate, and the weight of potassium permanganate reduced was six times that of the alkaloid in some cases.

The rate of destruction of each of several alkaloids and the approximate amount of potassium permanganate required to destroy a given amount were determined by adding measured amounts of a solution of potassium permanganate to a solution of the poison, and after intervals varying from two minutes to half an hour extracting any undecomposed alkaloid by shaking the solution with chloroform after the addition of sodium bicarbonate, distilling the chloroform and testing the residue by means of Valser's reagent for the presence of unchanged alkaloid. In a few cases the amount was estimated biologically.

Codeine sulphate is decomposed promptly by an excess of potassium permanganate in acid, alkaline or neutral solutions, but codeine ultimately reduces from three to six times its weight of potassium permanganate, the behavior being much like that of morphine. It has been suggested that morphine is oxidized with the formation of pseudomorphine; however, pseudomorphine is also decomposed instantly by potassium permanganate.

Moor said that potassium permanganate decomposes strychnine so slowly that it is of no value as an antidote in the presence of organic matter. That statement is misleading. Strychnine sulphate in an alkaline, neutral or acid solution is decomposed rapidly by a great excess of potassium permanganate, but with only a slight excess of the latter the reaction requires several minutes. In one of our experiments, after 50 mg. of strychnine sulphate in a slightly acid solution had been treated with six times its weight of potassium permanganate for three minutes, only a trace of strychnine remained. The result was confirmed by the biologic test on frogs. In another experiment strychnine sulphate was treated with its own weight of potassium permanganate in alkaline solution for two minutes, about 90 per cent of the alkaloid being destroyed. In one experiment strychnine sulphate with eight times its weight of blood albumin was treated with eight times its weight of potassium permanganate, that is, an amount equal to that of the weight of the albumin, in alkaline solution for two minutes. All but traces of the alkaloid were destroyed. In this case it is plain that the potassium permanganate acted on the strychnine much more rapidly than on the blood albumin, but it must be emphasized that this was in an alkaline solution, because, while strychnine is decomposed rapidly in an alkaline solution, blood albumin is decomposed more slowly in an alkaline solution. With an acid reaction the conditions would be reversed, albumin being decomposed more rapidly in an acid solution, and strychnine more slowly.

The average fatal oral dose of strychnine is about 2 grains (0.13 Gm.) and a solution of an excess of potassium permanganate with sodium bicarbonate will insure the destruction of a large part of the strychnine that may be present in the stomach. Brucine behaves much like strychnine.

Moor stated that potassium permanganate has no oxidizing effect on aconitine or on veratrine. It seems probable that he used impure specimens. An old specimen of aconitine labeled "Aconitine Pure" was found to be but slightly soluble in water, and, when this powder was dusted on a solution of potassium permanganate, decomposition occurred slowly. Some of this powder dissolved in hydrochloric acid was gradually decomposed by potassium permanganate in the course of two minutes. Another specimen labeled "Aconitine Sulphuric Merck, Crystalline" when dissolved in water was decomposed instantly by potassium permanganate. The progress of poisoning by aconitine is so rapid that the physician seldom has an opportunity to apply antidotal measures. Veratrine alkaloid was also decomposed slowly when dusted on a solution of potassium permanganate, whereas veratrine sulphate in solution was decomposed rapidly by an acid, neutral or alkaline solution of that salt.

Phenol reduces potassium permanganate at once in an acid, neutral or alkaline solution. Beechwood creosote is almost insoluble in water; nevertheless, when shaken with a solution of potassium permanganate it is decomposed almost instantly. This is of little importance, however, because the fatal dose of either is about 30 Gm., and each reduces from six to seven times its weight of potassium permanganate. Trinitrophenol is decomposed in either aqueous or alkaline solution. Nitrobenzene is slightly soluble in water and, unlike creosote, only that portion which goes into solution is decomposed rapidly.

Salicylic acid and acetylsalicylic acid are decomposed by potassium permanganate more slowly in alkaline than in acid solutions. Amidopyrine is decomposed almost instantly in an acid, neutral or alkaline solution, and the closely related antipyrine is decomposed promptly by three times its weight of the reagent in an acid solution and much more slowly in an alkaline solution. Acetanilid is decomposed slowly in acid, alkaline and neutral solutions.

Picrotoxin seldom causes fatal poisoning in man, but the closely related wild parsnip frequently causes death. Picrotoxin in an alkaline solution is decomposed by about twice its weight of potassium permanganate in a few minutes; more slowly in acid.

Poisoning of varying degrees by the hypnotics is not uncommon, and, since they are usually taken by mouth, such cases would seem to offer a field for the use of this antidote. The fatal dose of the hypnotics varies from about 2.5 to 10 Gm., and, without definite knowledge of the amount remaining in the stomach, one has no satisfactory guide for the dosage of potassium per-

manganate even in those cases in which it decomposes the hypnotic. Dial and alurate are decomposed immediately in acid, neutral and alkaline solutions. Barbital, phenobarbital, amytal, neonal, sulphonal and hydrated chloral are either unaffected or decomposed so slowly as to preclude the effective use of potassium permanganate. In the case of dial and alurate poisoning a solution of 1:5,000 may be used to wash the stomach.

Poisoning seldom occurs from the oral administration of a local anesthetic, but our experiments confirm the statement of Moor that cocaine or cocaine hydrochloride is decomposed slowly and, it may be added, whether in acid, alkaline or neutral solutions. Procaine or the hydrochloride is decomposed almost immediately by an excess of potassium permanganate.

Atropine and pilocarpine are also very slowly decomposed in acid, alkaline and neutral solutions. This is in harmony with Moor's results. The greater part of quinine sulphate in a neutral or acid solution is decomposed almost instantly by about twice its weight of postassium permanganate; more slowly in an alkaline solution.

Moor stated correctly that the oral administration of potassium permanganate is useless in atropine, pilocarpine, caffeine, hydrocyanic acid or phosphorus poisoning. Nevertheless, many recent authorities continue to recommend it, especially for the destruction of hydrocyanic acid and phosphorus. However, while hydrocyanic acid is not decomposed rapidly by it in an acid or neutral solution, the addition of sodium bicarbonate insures its instantaneous destruction; but neither acid nor alkali promotes the oxidation of the insoluble yellow phosphorus in substance.

Tea and coffee contain tannin as well as caffeine, and their presence in the stomach is of some importance. Caffeine is decomposed by about its own weight of potassium permanganate, the rate of reaction increasing with the acidity. It begins instantly and is nearly complete in fifteen minutes with 0.4 per cent of hydrochloric acid, but it is not complete in a neutral solution even after several hours when a barely sufficient amount of the reagent is added to caffeine. Tannin is decomposed by potassium permanganate almost instantly.

An attempt was made to determine whether morphine added to an infusion of tea or coffee is decomposed by an amount of the reagent that is insufficient to decompose all the morphine, caffeine and tannin. One hundred and fifty cubic centimeters of an infusion representing 5 Gm. of tea reduced about 2 Gm. of potassium permanganate within a few minutes, and an infusion of coffee was equally active. Hence the presence of tea or coffee in the stomach may exert a greater influence on the decomposition of slowly reacting poisons than a considerable amount of protein. In one experiment, in which morphine sulphate was added to an infusion of tea and the mixture was treated with potassium permanganate for a few minutes, nearly half the morphine escaped destruction in an acid and in a neutral solution. Hence, when morphine is present in the stomach with tea or coffee the amount of potassium permanganate administered should be sufficient at least to decompose the tannin and the morphine. The caffeine is negligible in such cases. Cane sugar is decomposed so slowly that its presence in the stomach may be disregarded. Alcohol interferes with the destruction of some poisons.

CONCENTRATION

The concentration of a solution of potassium permanganate has comparatively little influence on the rate of destruction of certain poisons. A neutral solution containing one part of potassium permanganate to 2,500,000 was decolorized instantly by an excess of morphine, and by amidopyrine; alkaline solutions containing one part of potassium permanganate to 1,000,000 were decolorized almost instantly by a large excess of any of the following: sodium cyanide, hydrocyanic acid, brucine and sparteine; in a neutral solution by pseudomorphine, and in an acid solution by quinine. Three milligrams of strychnine sulphate added to 100 cc. of a 1:100,000 solution of potassium permanganate decolorized an alkaline solution in about three minutes, a neutral solution in six minutes and an acid solution in about half an hour.

SUMMARY

1. Potassium permanganate has a distinct but limited field of usefulness in the treatment of cases of poisoning. Fairly dilute solutions are irritant and concentrated solutions are caustic, while a large dose may cause death.

2. Among the more common alkaloids that give rise to fatal poisoning after their oral administration and for which potassium permanganate may be useful are aconitine, amidopyrine, antipyrine, morphine and strychnine. To these may be added picrotoxin and probably picrotoxin-like substances (wild parsnip). Potassium permanganate may be used for the destruction of hydrocyanic acid and of potassium or sodium cyanide in the stomach, but only in an alkaline solution.

3. The reaction of potassium permanganate with different poisons varies widely, depending on whether they are present in acid, neutral or alkaline solutions.

4. Potassium permanganate should not be depended on to destroy all the poison, and its use should be followed by evacuation of the stomach.

5. Potassium permanganate may be administered orally in concentrations varying from 1:2,000 to 1:5,000, depending on the dose required; and 1:5,000 may be used for washing the stomach.

6. Potassium permanganate is useless in cases of poisoning by atropine, cocaine or yellow phosphorus in substance, or by any one of the greater number of the hypnotics; it may be useful in washing the stomach after poisoning by alurate, dial and possibly some others; not after barbital, phenobarbital, amytal, neonal, sulphonal or hydrated chloral poisoning. It may be used for washing the stomach in cases of poisoning by phenol or creosote, but it cannot be administered safely in sufficient amounts to decompose an otherwise fatal dose of either.

7. The dose of potassium permanganate and the concentration of the solution should be governed by the nature and the quantity of the substance which it is designed to decompose, and with reference to the other contents of the stomach. Potassium permanganate decomposes protein much less rapidly than it decomposes certain poisons, tannin (from tea and coffee) almost instantly, diluted alcohol within a few minutes and sugar (sucrose) very slowly.

8. There is no justification for the intravenous, subcutaneous or intramuscular injection of potassium permanganate for the destruction of any poison in the circulation.

1300 York Avenue.

Clinical Notes, Suggestions and New Instruments

KARAYA GUM ASTHMA

SAMUEL M. FEINBERG, M.D., CHICAGO

It has been known for a long time that cosmetic preparations frequently cause allergic symptoms, particularly in the respiratory tract. Most of the instances reported and figures cited pertain to facial cosmetics and their orris content. Now it is becoming more and more evident that many other types of preparations, such as are used on the hair for wave-setting purposes, may contain ingredients that give rise to allergic reactions. Among the materials that have been incriminated are lycopodium and linseed. One case of vasomotor rhinitis due to Karaya gum in the hair-waving fluid has been reported.[1] According to the United States Department of Agriculture,[2] the following ingredients are used in the manufacture of hair fixers: acacia; gum tragacanth; linseed gum; quince seed gum; Karaya gum; boric acid; sodium potassium and ammonium carbonates; alcoholic keratin; coloe; petrolatum; cera-flux, glyco wax A and paraflux.

In this connection the following case is of interest:

Mrs. F. S., a married woman, aged 31, consulted me, Nov. 8, 1934, for an asthma of two years' duration. Her attacks would usually last two days, and not a week passed without such symptoms. The longest period that she had ever been free from asthma was one month—during which time she was on a visit in Iowa. Her occupation in the past had been hairdressing, but in the last year she worked only occasionally because of the debilitating effect of the asthma. She was accustomed to dress her own hair with her favorite waving fluid, and since she could not work regularly she frequently would do hair waving at her home for the convenience of some of her friends. The patient suspected that flour, hair-dressing fluid, face powder, and tobacco might be factors in the causation of the attacks. There was a distinct familial history of allergy: a grandmother and an uncle had asthma and both of the patient's parents suffered from eczema.

Complete skin tests (including linseed) by the cutaneous method revealed a two-plus reaction to wheat, sweet potato and tobacco and a one-plus reaction to orris root. A drop of the hair-waving fluid that the patient used on the site of a small scratch produced a wheal about 2 cm. in diameter. The chemist who prepared the fluid was interviewed and it was learned that the material was a solution of Karaya gum and sodium benzoate in water. The patient was instructed to obtain some of the powdered Karaya gum from the chemist. She was curious to know about the appearance of the powder. At home she opened the box and in two or three minutes an attack of asthma ensued that lasted two days. Subsequently scratch tests were made with the powdered Karaya gum, sodium benzoate, tragacanth, acacia and another brand of hair-waving fluid. All were negative, with the exception of the Karaya gum. The latter gave an enormous reaction.

The patient was instructed to eliminate wheat and sweet potatoes from her diet, to change to orris-free cosmetics and to avoid tobacco smoke. After a test period the asthma still persisted. She was then instructed to remove the hair-waving fluid from her home and never to use it on herself or any one else. In addition she was advised to give her home a thorough cleaning. Following this procedure the asthma disappeared and after a period of six months the asthma has not recurred, in spite of the addition of the wheat and sweet potatoes in her diet and the use of cosmetics containing orris.

This is the second case of allergy and the first of asthma reported as due to Karaya gum in hair-waving fluid. By inquiry it has been ascertained that this material is a common ingredient of many brands of fluids. Karaya gum, or Indian gum, is a white or gray powder obtained from the sap of a tree, Angoeisus Latifolia Wall, grown chiefly in India. It can be readily understood that these fluids, after drying on the hair and becoming pulverized, may serve as a prolific source of allergic irritation to the individual herself or to her friends. Occupational exposure must also be kept in mind. No doubt many more undiagnosed cases exist. Karaya gum, because of its property of absorbing water and increasing markedly in bulk, has been used for constipation with similar effects as with the use of linseed, agar and the like. The product known as "Kaba" is made from Karaya gum. This material is also used as an emulsifying agent, as an ingredient of hand lotions and in the process of calico printing. In India it is used in the preparation of sweetmeats.

Attention is called to the importance of giving serious consideration to Karaya gum and similar hair-setting fluids as a possible cause of vasomotor rhinitis, asthma and other forms of allergy.

185 North Wabash Avenue.

From the Allergy Department of Northwestern University Medical School.

1. Bullen, S. S.: Perennial Hay Fever from Indian Gum (Karaya Gum), J. Allergy **5**: 484 (July) 1934.
2. United States Department of Agriculture, Food and Drug Administration: Personal communication to the author.

STUDIES ON CAPILLARY FRAGILITY: A DEVICE FOR THE STUDY OF CAPILLARY HEMORRHAGE

IRVING S. CUTTER, M.D., AND CARL A. JOHNSON, M.D., CHICAGO

For a number of years one of us has been interested in studies on the capillaries with particular reference to capillary fragility and capillary leakage by diapedesis. It is felt that both these processes might occur as a result of an acute injury to the capillary vessels, as in scarlet fever, from long standing cardiovascular disease, or as a result of a constitutional weakness of the vessels such as occurs in certain of the blood dyscrasias.

Two types of instruments have been used to obtain an objective index of the capillary injury:

1. The positive pressure method in which a cuff is placed around the upper arm and pressure applied. In certain diseases, such as scarlet fever, petechiae occur below the cuff; this is known as the Rumpel-Leede phenomenon.

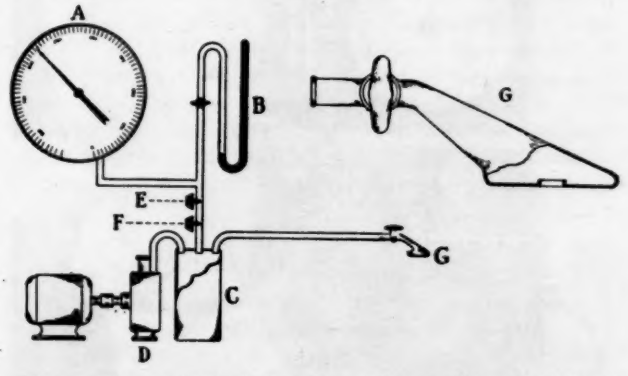


Fig. 1.—Diagram of the instrument. *A* is a special mechanical gage graduated from 0, or vacuum, to 760 mm. of mercury and from 760 to 0 (not shown in the diagram); *B* is a mercury gage; *C* is a 500 cc. reservoir; *D*, a vacuum pump; *E* and *F* are "by pass" needle valves, and *G* is a suction chamber. *G* is drawn larger in the upper diagram so as to show more accurately its construction.

2. The suction method by which negative pressure is applied to a small area and the amount of suction in a given time necessary to produce hemorrhage is measured.

The first of these was devised by Hecht,[1] but for our purpose it was not satisfactory because it is difficult to handle, it is not portable, and accurate measurements cannot easily be made. In 1931 Cutter and Marquardt[2] described a suction instrument by means of which rupture of capillaries was

From the Department of Medicine of Northwestern University Medical School.

1. Hecht, A. F.: Experimentell-klinische Untersuchungen über Hautblutungen im Kindesalter, Jahrb. f. Kinderh. Ergänzungsheft **65**: 113, 1907.
2. Cutter, I. S., and Marquardt, G. H.: Studies on Capillary Fragility, Proc. Soc. Exper. Biol. & Med. **28**: 113 (Nov.) 1930.

observed directly with the capillary microscope, but this was not readily adaptable to clinical use.

The instrument here described embodies certain principles that are essential for rapid and accurate work and lends itself with ease to clinical studies.

Figure 1 is a diagrammatic illustration of the instrument. It consists of *A*, a gage graduated from 0 to 760 (mm. of mercury negative pressure) and from 760 to 0 (barometric pressure). This gage is connected to *B*, a mercury gage, by which the accuracy of the mechanical gage can be checked when desired. The gage system is connected to *C*, a reservoir with a capacity of 500 cc., and this in turn is connected to *D*, a small rotary vacuum pump, capable of producing a (partial) vacuum down to within 0.25 mm. of mercury. There are two "by pass" needle valves, *E* and *F*, by which air can be admitted into the system and any degree of vacuum obtained and maintained. The reservoir is also connected by means of a heavy rubber tube to the suction chamber, *G*. This is provided with a stopcock so that the suction chamber can be shut off from the rest of the vacuum system. It is observed that the volume of the suction chamber is very small as compared with the rest of the system. This makes a more accurate adjustment possible.

The suction chamber, *G*, is of a special design; the upper surface is flat and the skin area under observation can be visualized during the time that measurements are being taken, and the evolution of the hemorrhages can be observed by means of a lens. (An otoscope furnishes illumination as well as a lens for this purpose.) The hole in the suction cup is 5 mm. and the flange is 10 mm. A 5 mm. aperture is used because with a larger opening the skin may be sucked into the chamber and hence cause pain in infants and children.

The whole instrument is enclosed in a carrying case measuring 12 by 9 by 9 inches and weighs 20 pounds (fig. 2).

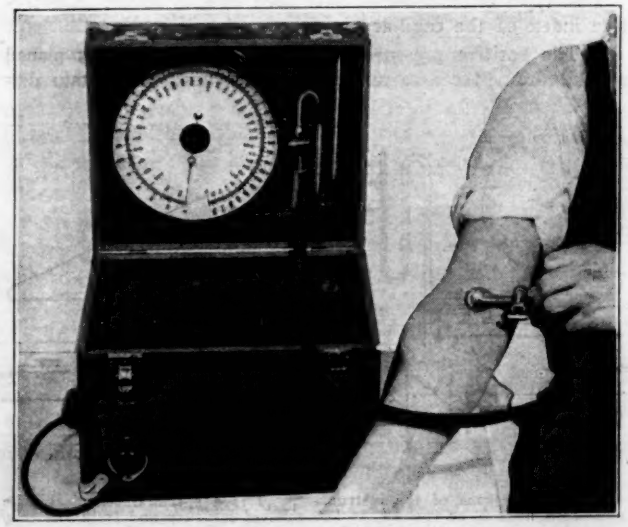


Fig. 2.—Appearance of the instrument.

To operate, the suction pump is turned on with the stopcock of the suction chamber closed. The desired negative pressure is obtained by adjusting the "by pass" needle valves. The suction cup is applied to the skin when it is desired to make an observation and the stopcock on the suction cup is opened. No special seal is necessary. The skin over the area is observed (through the suction cup) by means of the lens of an otoscope. The otoscope also furnishes the illumination. The suction is applied for thirty seconds and the number of hemorrhages are recorded. Readings are taken at intervals of 50 mm. of negative pressure, although shorter periods may be used.

The skin area most commonly used is the cubital space or the infraclavicular region, as these areas give the most uniform results.

There seem to be two types of hemorrhage, one evidenced by a bright red spot interpreted to be due to capillary rupture, and the second by a darkened more diffuse hemorrhagic area thought to be due to hemorrhage by diapedesis. These can be distinguished grossly, and experiments are now in progress to determine the microscopic differences between the two lesions.

Results thus far obtained with this instrument indicate that it has a wide field of usefulness in the study of the peripheral vascular bed, with particular reference to the factors underlying capillary hemorrhage.

303 East Chicago Avenue.

Special Article

GLANDULAR PHYSIOLOGY AND THERAPY

GASTRO-INTESTINAL PRINCIPLES

EXCEPTING THOSE HAVING ANTIANEMIC AND CIRCULATORY EFFECTS

A. C. IVY, PH.D., M.D.
CHICAGO

NOTE.—*This article and the articles in the previous issues of* THE JOURNAL *are part of a series published under the auspices of the Council on Pharmacy and Chemistry. Other articles will appear in succeeding issues. When completed, the series will be published in book form.*—ED.

SALIVARY GLANDS

There is no evidence indicating that a hormone mechanism is significantly concerned in the secretion of saliva. Extracts of the buccal and pharyngeal mucosa fail to stimulate the salivary glands, and the introduction of dilute acid into the mouth does not stimulate the recently denervated submaxillary gland.[1] Stimulation should result if a hormone mechanism is concerned.

It has been shown that, following the stimulation of the peripheral end of one chorda tympani nerve, a choline-like agent appears in the blood; this results in a slight fall in blood pressure and in secretion by the salivary gland on the opposite side. Stimulation of the sympathetic supply of the submaxillary gland is said to cause liberation of an epinephrine-like agent. Whether such principles are elaborated during the mastication of a meal in sufficient amounts to exert a detectable physiologic influence has not been demonstrated.[2]

Some evidence has been reported purporting to indicate that the salivary glands produce an internal secretion which influences the production of other digestive secretions and even affects sugar metabolism. None of the evidence that has been submitted to date is convincing.[3] It is interesting that bilateral ligation of the duct of the parotid gland in the dog increases sugar tolerance in the normal but not in the depancreatized dog.[4]

STOMACH

Gastrin.—The secretion of gastric juice following the ingestion of a meal is due only in part to a humoral mechanism. That a humoral mechanism is concerned

From the Department of Physiology and Pharmacology, Northwestern University Medical School.

1. Ivy, A. C.: Rôle of Hormones in Digestion, Physiol. Rev. **10**: 282 (April) 1930.
2. Cattell, McKeen; Wolff, H. G., and Clark, Dean: Liberation of Adrenergic and Cholinergic Substances in the Submaxillary Gland, Am. J. Physiol. **109**: 375 (Aug.) 1934.
3. Römer, C.: Speicheldrüsen und innere Sekretion, Mitt. a. d. Grenzgeb. d. Med. u. Chir. **40**: 465, 1927. Rosenfeld, G.: Speicheldrüsen Kohlehydratstoffwechsel, Klin. Wchnschr. **12**: 711 (May 6) 1933. Glaser, E., and Bannet, I., ibid. **12**: 345 (March 4) 1933.
4. Zimmerman, L. M., and Soskin, Samuel: Effect of Ligation of Parotid Ducts on Carbohydrate Metabolism, Arch. Int. Med. **49**: 409 (March), 663 (April) 1932.

has been demonstrated by the secretion of an autotransplanted gastric pouch following a meal.[5] The humoral agent or agents may be either absorbed secretagogues present in or arising from the digestion of certain foods (meat, liver or other substances) or the hormone gastrin.

The fraction of liver extract that contains the antipernicious anemia substance is rich in gastric secretagogic potency. This fraction stimulates gastric secretion on local application to the gastric and intestinal mucosa. It does not act by being absorbed from the stomach but may act by being absorbed from the intestine. When this fraction is freed of vasodepressor substances, it will stimulate gastric secretion when slowly injected intravenously. Thus, there is an example of a gastric secretagogue that may act by way of a humoral route.[6] The hormone gastrin is supposed to be elaborated chiefly by the mucosa of the pyloric antrum, and possibly by the mucosa of the intestine, when the mucosa is appropriately stimulated, preferably by solutions containing secretagogues.

An acid extract of pyloric mucosa, when injected hypodermically, stimulates gastric secretion. Crystalline histamine has been isolated from such an extract;[7] the evidence indicates that it is the sole secretory excitant of such extracts; that is, gastrin and histamine appear to be identical. It would appear, then, that histamine is the gastric hormone, if such a hormone exists. If some other substance is the gastric hormone, it has never been extracted from the pyloric mucosa.

Histamine (either the methyl or the ethyl derivative) is the most potent excitant of acid gastric secretion known, and it will stimulate the gastric glands in concentrations that have little or no effect on systemic blood pressure.[1] There is no evidence indicating that histamine has a therapeutic value. It does have a very definite place among the tests of gastric function; namely, to determine whether the gastric glands can secrete free acid. The histamine test is the most rigorous test that may be employed to differentiate between true and false anacidity.[8]

INTESTINE

The mucosa of the upper part of the intestine elaborates two hormones, namely, secretin and cholecystokinin, and the inhibitory principle enterogastrone. The possibility that two other hormones are also elaborated in the upper part of the intestine has been suggested: one is said to stimulate the production of insulin (incretin) and another to augment the motility of the intestine.

Secretin.—The discovery of secretin by Bayliss and Starling in 1903 is one of the milestones in endocrinology. In the description of their observations they coined the term hormone. They found that when dilute acid is applied to the mucosa of the upper part of the intestine the pancreas is stimulated to secrete its digestive juice. They also showed that the intravenous administration of acid extracts of the duodenal mucosa stimulated pancreatic secretion. It was later demonstrated that application of acid to a transplanted jejunal loop will cause the transplanted tail of the pancreas to secrete; if the circulation of two dogs is cross-connected and acid is then placed in the duodenum of one of the pair, the pancreases of both will be stimulated to secrete.

It should not be surmised from these crucial experiments that acid is the only substance that causes secretin to be formed. Fatty acids, soaps and peptones are other food substances that cause the duodenum to elaborate secretin.[9] All attempts to demonstrate that postabsorptive circulating substances originating from food are concerned in stimulating the pancreas to secrete have met with failure.[10]

Highly purified preparations of secretin have a slight cholagogic and diuretic effect, which is of no practical significance. Similar preparations have no effect on sugar metabolism.[9b] The isolation of secretin in crystalline form has recently been reported.[11]

Highly purified preparations of secretin have been injected intravenously into man for the purpose of ascertaining whether secretin might be of practical use for estimating pancreatic function. It is too early to state whether secretin will be of value in this regard.[12] Secretin has no known therapeutic value. It is ineffective when taken by mouth, and it is relatively inactive hypodermically.

Cholecystokinin.—The chief stimulus of gallbladder contraction thus far discovered is the hormone cholecystokinin. Stimulation of autonomic nerves in the cat or dog has never been observed to have more than a slight temporary effect on the gallbladder. Attempts to demonstrate that postabsorptive circulating fatty substances originating from food are concerned in gallbladder evacuation have met with failure.

Cholecystokinin may be extracted from the mucosa of the upper part of the intestine of most animals and man. Such extracts, when free from histamine and choline, cause, on intravenous injection, a more or less prolonged contraction of the gallbladder with evacuation in man and animals. That this hormone operates physiologically has been shown by denervating the gallbladder, by cross-circulation and transplantation experiments in the dog and by blood transfusion experiments in man.[13]

The most effective excitants for production of this hormone are acids and fats acting in the upper part of the intestine. These substances have little or no action in the lower part. All fats are effective, but egg yolk and cream appear to be the most active. Proteins, particularly meat, rank next, and carbohydrates have little, if any, action.

Cholecystokinin is closely allied chemically to secretin but is probably not identical with it. Preparations of each have been made which are free of physiologically detectable quantities of the other.

This hormone has been shown to be active only on intravenous administration. Since it produces only a quicker, but not greater, effect on the gallbladder than ingested egg yolks and cream, it is not likely that it will prove to be of therapeutic or diagnostic value.

5. Ivy.[1] Klein, Eugene, and Arnheim, Ernest: Gastric Secretion: I. Transplanted Gastric Pouch, Arch. Surg. **25**: 433 (Sept.) 1932. Klein, Eugene: II. Studies in a Transplanted Pouch Without Auerbach's Plexus, ibid. **25**: 442 (Sept.) 1932.

6. Klein and Arnheim.[5] Klein.[5] Kim, M. S., and Ivy, A. C.: On the Mode of Action of Secretagogues (Liver Extract) in Promoting Gastric Secretion, Am. J. Physiol. **105**: 220 (July) 1933.

7. Sacks, J.; Ivy, A. C.; Burgess, J. P., and Vandolah, J. E.: Histamine as a Hormone for Gastric Secretion, Am. J. Physiol. **101**: 331 (July) 1932.

8. Bloomfield, A. L., and Polland, W. S.: Gastric Anacidity, New York, Macmillan Company, 1933.

9. (*a*) Ivy.[1] (*b*) Still, E. U.: Secretin, Physiol. Rev. **11**: 328 (July) 1931.

10. Ivy, A. C.: Unpublished data.

11. Hammarsten, E.; Jorpes, E., and Agren, G.: Versuche zur Reinigung von Sekretin, Biochem. Ztschr. **264**: 272, 1933.

12. Chiray, M.; Jeandel, A. (Mme.), and Salmon, A.: Presse méd. **38**: 977 (July 19) 1930. Voegtlin, W. L.; Greengard, H., and Ivy, A. C.: Am. J. Physiol. **110**: 198 (Nov.) 1934.

13. Ivy, A. C.: Physiology of the Gallbladder, Physiol. Rev. **14**: 1 (Jan.) 1934.

Enterogastrone.—It has long been known that undigested fat inhibits gastric secretion and motility, particularly when the fat is in the intestine. This inhibition was formerly thought to be due solely to a nervous reflex mechanism. It was found,[14] however, that the motility of a transplanted gastric pouch was inhibited by ingested fat and that this was not due to the absorption of fat or fatty substances.[15] This has been shown to be true also for the inhibition of gastric secretion caused by fat.[16] Lim and his colleagues found that a crude preparation of cholecystokinin, when injected in large doses, would inhibit gastric secretion.[17] This observation was then examined in detail, and it now appears that the inhibition of both gastric secretion and gastric motility caused by fat is due to a specific substance, which has been called enterogastrone.[18] These observations have been confirmed in my laboratory.

It has been demonstrated recently that a similar mechanism is concerned in the inhibition of gastric motility that occurs when dextrose is present in the upper part of the intestine.[19]

Enterogastrone, though it may now be prepared free of vasodepressor and toxic effects in the dog, has not been prepared sufficiently pure for use in man. However, it may prove to be useful in certain cases of "peptic" ulcer after it has been purified, and particularly if it can be shown to be active when given hypodermically.

Islet Stimulating Hormone. — Presumptive evidence has been reported indicating that the duodenum produces a hormone (incretin, or duodenin) which stimulates the pancreatic islets to produce insulin.[20] In the intact animal, certain fractions of duodenal extract cause a decrease in the hyperglycemia induced by dextrose or by epinephrine, regardless of the mode of administration. Some state that it will reduce the normal blood sugar level. It does not act in the depancreatized dog.[21] Several observers assert that extracts containing the principle are effective orally in reducing the ketosis and blood sugar in diabetic patients.[22]

The latent therapeutic possibilities in the fairly numerous reports now available on this principle justify careful clinical investigation. A theoretical question arises, however, in regard to the probable usefulness of this principle; namely, Should the islets of a diabetic patient be stimulated? Would not such stimulation result in injury?

THE SECRETION OF SUCCUS ENTERICUS

It is certain that mechanical and chemical stimuli acting locally are the primary factors concerned in the secretion of intestinal juice.[1]

Loops of the intestine transplanted into the skin secrete small amounts of juice continuously and are stimulated by local mechanical and chemical stimuli. Following a meal, it is difficult to detect an increase in secretion,[23] although an analytic study reveals some increase in volume of secretion and output of enzymes.[24] Thus, a humoral mechanism is apparently concerned in the secretion of succus entericus, but it does not play a predominant rôle.

A GASTRO-INTESTINAL MOTOR HORMONE?

Investigators from time to time have presented evidence purporting to show that gastro-intestinal motility is controlled in part by a hormone mechanism. In most of these studies an extract of intestinal mucosa was used that contained histamine, choline or both. In fact, choline has been called the gastro-intestinal hormone.[25] But the studies on which this claim was based are pharmacologic in nature.

In unanesthetized animals choline has variable effects; this is true also of man.[1] Its use in patients is not recommended.

There is some preliminary evidence available indicating that the intravenous injection of certain fractions of duodenal extracts, free from choline and histamine, augments intestinal motility.[26] Since the motility of transplanted loops of intestine is not definitely increased after the ingestion of a meal,[23] it would appear that if a hormone is concerned in regulating gastro-intestinal motility it is not readily detectable.

SUMMARY OF GASTRO-INTESTINAL HORMONE THERAPY

Although the gastro-intestinal hormones are of great physiologic interest, none of them have been definitely demonstrated to possess therapeutic value.

ADMINISTRATION OF PEPSIN

Pepsin as a therapeutic agent has passed through several periods of popularity since its discovery in 1835. In spite of this, practically no scientific evidence has been submitted showing that it is of real therapeutic value.

Theoretically, pepsin with adequate hydrochloric acid is indicated in achylia gastrica, particularly in those patients who complain of flatulent dyspepsia and diarrhea. Although such therapy is not infrequently employed in achylia gastrica, clinical reports are at variance in regard to the importance of the pepsin. Most of the recent reports indicate that hydrochloric acid alone is sufficient; however, others report that some patients do better after pepsin is added to the acid.[27]

In the presence of gastric anacidity there is some evidence indicating that, after the adequate administration of acid, a normal amount of pepsin may be secreted by the gastric glands. In such patients the addition of

14. Ivy, A. C., and Farrell, J. I.: Am. J. Physiol. **74:** 639 (Nov.) 1925.
15. Quigley, J. P.; Zettelman, H. J., and Ivy, A. C.: Gastric Motor Inhibition by Fats, Am. J. Physiol. **108:** 643 (June) 1934.
16. Feng, T. P.; Hou, H. C., and Lim, R. K. S.: Chinese J. Physiol. **3:** 371 (Oct.) 1929.
17. Kosaka, T.; Lim, R. K. S.; Ling, S. M., and Liu, A. C.: Chinese J. Physiol. **6:** 107 (Feb. 15) 1932.
18. Kosaka, T., and Lim, R. K. S.: Inhibitory Agent from Intestinal Mucosa, Chinese J. Physiol. **7:** 5 (March 15) 1933.
19. Quigley, J. P., and Phelps, K. R.: Gastric Motor Inhibition by Carbohydrate, Am. J. Physiol. **109:** 133 (July) 1934.
20. Ivy, A. C., and Fisher, N. F.: Am. J. Physiol. **67:** 445 (Feb.) 1924. Still.[9b] Gley, E., and Hazard, R.: Compt. rend. Soc. de biol. **99:** 16 (June 8) 1928. Zunz, E., and La Barre, J.: Arch. Int. de Physiol. **31:** 1, 1929. La Barre, Jean, and Houssa, Pierre: Compt. rend. Soc. de biol. **110:** 598 (June 27) 1932. Laughton, N. B., and Macallum, A. B.: Proc. Roy. Soc. London, s. B **111:** 37 (June 1) 1932.
21. Laughton and Macallum.[20] La Barre, J.: Bull. Acad. roy. de méd. de Belgique **12:** 620 (Nov. 26) 1932.
22. Takács, L.: Ztschr. f. d. ges. exper. Med. **60:** 414, 1928. Tangl, H., and Than, F.: Arch. f. exper. Path. u. Pharmakol. **139:** 226, 1929. Heller, H., ibid. **145:** 343, 1929; Klin. Wchnschr. **44:** 476, 1931.
23. Ivy, A. C.; Farrell, J. I., and Lueth, H. C.: Hormone for External Pancreatic Secretion, Am. J. Physiol. **82:** 27 (Sept.) 1927. Puestow, C. B.: The Activity of Isolated Intestinal Segments, Arch. Surg. **24:** 565 (April) 1932.
24. Nasset, E. S.; Pierce, H. B., and Murlin, J. R.: Proof of Humoral Control of Intestinal Secretion, Am. J. Physiol. **111:** 145 (Feb.) 1935.
25. Le Heux, J. W.: Arch. f. d. ges. Physiol. **190:** 280, 1921. Ivy.[1]
26. Burgess and Ivy, and Burget, cited by Ivy.[1] Templeton, cited by Still.[9b] Sandblom and Voegtlin: Unpublished data.
27. Loeper, M., and Braumann, J.: Progrès méd. **36:** 348 (July 23) 1921. Brockbank, William: Proc. Roy. Soc. Med. **24:** 951 (May) 1931. Bastedo, W. A.: The Use and Utility of Digestive Enzymes in Therapeutics, J. A. M. A. **85:** 743 (Sept. 5) 1925.

pepsin to the acid is superfluous.[28] Whether the stomach of a patient manifesting anacidity will secrete adequate pepsin on the administration of acid can be determined only by fractional gastric analysis.

Recently several brief clinical reports have appeared, indicating that the administration of desiccated hog's stomach (ventriculin) may be as effective as hydrochloric acid in relieving the dyspeptic symptoms and diarrhea in patients having achylia gastrica and anacidity.[29]

Pepsin has been administered subcutaneously to patients having a "peptic" ulcer;[30] the claim has been made that pepsin plays a specific rôle. Both favorable and unfavorable reports on this therapy have been made. The rationale on which such therapy is based and the clinical reports now available are not sufficiently impressive to warrant a statement concerning the details of the therapy.

THE ORAL ADMINISTRATION OF RAW PANCREAS AND PANCREATIN

Experimentally it is established that the absolute exclusion of pancreatic juice from the intestine in the dog results in polyphagia, the passage of large bulky stools, and a considerable disturbance of the digestion and absorption of fat and protein, and to a lesser extent of that of carbohydrate.[31] It is also true that some dogs are much more affected than others and that the same dog may manifest considerable fluctuation from time to time in the capacity to utilize food fat. More than half of the dogs manifest progressive inanition and die unless large quantities of easily digested foods are supplied with a liberal supply of vitamins. Even this fails not infrequently after from six to ten months.

Many laboratory workers who have experimented in this field[32] have added raw ground pancreas in relatively large amounts (from 50 to 200 Gm. daily) to the diet of depancreatized dogs controlled with insulin and to the diet of dogs with absolute exclusion of the pancreatic juice from the intestine. With raw pancreas in the diet, such dogs have remained in excellent condition for several years; this is not otherwise the case, except in rare instances.[33]

The mechanism of the effect of such therapy is not simple. Raw ground pancreas was originally administered with the hope that some of the contained enzymes would pass through the stomach without being inactivated by the acid of the gastric juice.[34] However, this has never been demonstrated by direct experiment on dogs with duodenal or jejunal fistulas.[35] There is evidence, though meager, indicating that the administration of raw pancreas, pancreatin (from 10 to 20 Gm.), or pancreatic juice to depancreatized dogs, or dogs deprived of pancreatic juice, decreases the fat lost in the feces,[36] as well as the nitrogen.[37] Whether this is due to improved digestion or absorption has not been settled, though the latter appears chiefly to be concerned. Further, in interpreting the changes in fecal fat loss, one has to consider also the possibility of changes in the excretion of fat by the intestinal mucosa. The problem is rendered more complex, yet more important, by the more recent reports that the lecithin and choline content of the raw pancreas, rather than the enzymic content, is chiefly responsible for the better nutrition and greater longevity of insulin-controlled depancreatized dogs. The administration of raw pancreas, lecithin or choline prevents the marked fatty infiltration of the liver and hepatic insufficiency.[38]

The clinical literature prior to 1912 contains reports on a few well studied patients with pancreatic deficiency in whom the administration of raw pancreas or pancreatin decreased the fecal loss of fat and nitrogen.[39] Since then very little clinical investigation has been reported.[40] The survey of Bastedo [27] in 1925 indicated that pancreatin was not being widely used except in tropical sprue and pancreatitis. Pancreatin and raw pancreas are still being used in sprue,[41] although their value has not been definitely demonstrated by a thorough study. It has been reported that in sprue the concentration of enzymes in duodenal contents is normal,[35] but this does not mean that the total output is normal. Pancreatin therapy has been recently reported to be of value in the treatment of arthritis deformans [42] and scleroderma.[43]

SUMMARY

The administration of adequate amounts of raw pancreas or active pancreatic extracts orally in the presence of a deficiency of the external pancreatic secretion has a firm theoretical basis. The value of raw pancreas given orally to depancreatized dogs is established, the chief value of the therapy apparently being to prevent fatty degeneration of the liver. There is some evidence indicating that administration of raw pancreas and pancreatin to animals and patients having a definite deficiency of pancreatic secretion decreases the loss of fat and nitrogen in the feces. Such therapy has been used in sprue and other conditions, but its value in these has not been definitely established.[44]

303 East Chicago Avenue.

28. Dobson, H. V.: Achlorhydria: Treatment with HCl and Pepsin, J. Pharmacol. & Exper. Therap. **30:** 447 (April) 1927.

29. Wilkinson, J. F.: Proc. Roy. Soc. Med. **24:** 948 (May) 1931. Eusterman, G. B.: Achlorhydria, Northwest Med. **30:** 249 (June) 1931. Schiff, Leon, and Tahl, Toba: Am. J. Digest. Dis. & Nutrition **1:** 543 (Oct.) 1934.

30. Glaessner, K.: Lancet **1:** 77 (Jan. 9) 1932. Fernández, F.: Progresos de la clin. **40:** 129 (March) 1932. Bremer, H., and Strauss, L. H.: Pepsin Therapie, Fortschr. d. Therap. **10:** 199 (April) 1934.

31. Pratt, Lamson and Marks: Tr. A. Am. Physicians **24:** 266, 1909. McClure, C. W.: Vincent, B., and Pratt, J. H.: J. Exper. Med. **25:** 381 (March) 1917. Nasset, E. S.; Pierce, H. B., and Murlin, J. R.: Influence of Yeast on Protein Metabolism in Normal and Depancreatized Dogs, J. Lab. & Clin. Med. **16:** 1151 (Sept.) 1931. Fauley, G. B., and Ivy, A. C.: Am. J. Physiol. **89:** 428 (July) 1929. Pratt, J. H.: Internat. Clin. **3:** 164 (Sept.) 1931. Handelsman, M. B.; Golden, L. A., and Pratt, J. H.: J. Nutrition **8:** 479 (Oct.) 1934. Koskowski, W., and Ivy, A. C.: Effect of Pancreatectomy on Secretion of Succus Entericus, Am. J. Physiol. **75:** 640 (Feb.) 1926.

32. Hershey, J. M., and Soskin, Samuel: Lecithin in Diet of Depancreatized Dogs, Am. J. Physiol. **98:** 74 (Aug.) 1931. Best, C. H., and Hershey, J. M.: J. Physiol. **75:** 49 (May) 1932. Best, C. H.; Hershey, J. M., and Huntsman, M. E., ibid. **75:** 56 (May) 1932. Best, C. H.; Ferguson, G. C., and Hershey, J. M., ibid. **79:** 94 (July 28) 1933. Ivy, A. C.: The author and his students have considerable unpublished data on this point.

33. Penau, H., and Simonnet, H.: Ann. de méd. **19:** 401 (April) 1926. Handelsman, Golden and Pratt.[31]

34. Macleod, J. J. R.: Carbohydrate Metabolism and Insulin, London, Longmans, Green & Company, 1926. Hedon, E.: La survie indéfinie du chien dépancréaté traité par l'insuline et les effets de l'interruption du traitement, J. de physiol. et de path. gén. **25:** 1 (March) 1927.

35. Silverman, D. N.: South. M. J. **20:** 762 (Oct.) 1927. Silverman, D. N.; Denis, W., and Leche, S.: Am. J. M. Sc. **170:** 727 (Nov.) 1925.

36. McClure, Vincent and Pratt.[31] Hershey and Soskin.[32]

37. Pratt, Lamson and Marks.[31] Nasset, Pierce and Murlin.[31]

38. Hershey and Soskin.[32] Best and Hershey.[32]

39. Fles, in Von Tiemsen: Handb. d. spec. Path. u. Therap. **7:** 218, 222, 1875. Salmon: Berl. klin. Wchnschr. **39:** 45, 1902. Stadelman, in Leyden's Handbuch der Ernahrungstherapie, ed. 2, Leipzig **2:** 152, 1904. Ehrmann: Ztschr. f. klin. Med. **49:** 319, 1910. Tileston: Tr. A. Am. Physicians **26:** 513, 1911. Mosenthal, H. O.: A Case of Pancreatic Diabetes Mellitus, Arch. Int. Med. **9:** 339 (March 15) 1912.

40. Lambert, S. M.: A personal Experience with Sprue, J. A. M. A. **80:** 1910 (June 30) 1923. Brown, T. R.: Bull Johns Hopkins Hosp. **26:** 289 (Oct.) 1916. Silverman.[35]

41. Castellani, Aldo: J. Trop. Med. **33:** 126 (May 1) 1930; **28:** 230 (June 15) 1925.

42. Walker, F. N.: Arthritis Deformans, Canad. M. A. J. **29:** 396 (Oct.) 1933.

43. Sellei, J.: Fermenttherapie, München. med. Wchnschr. **79:** 1625 (Oct. 7) 1932.

44. Only the more recent leading references have been given. By referring to these, the reader may obtain an introduction to the literature.

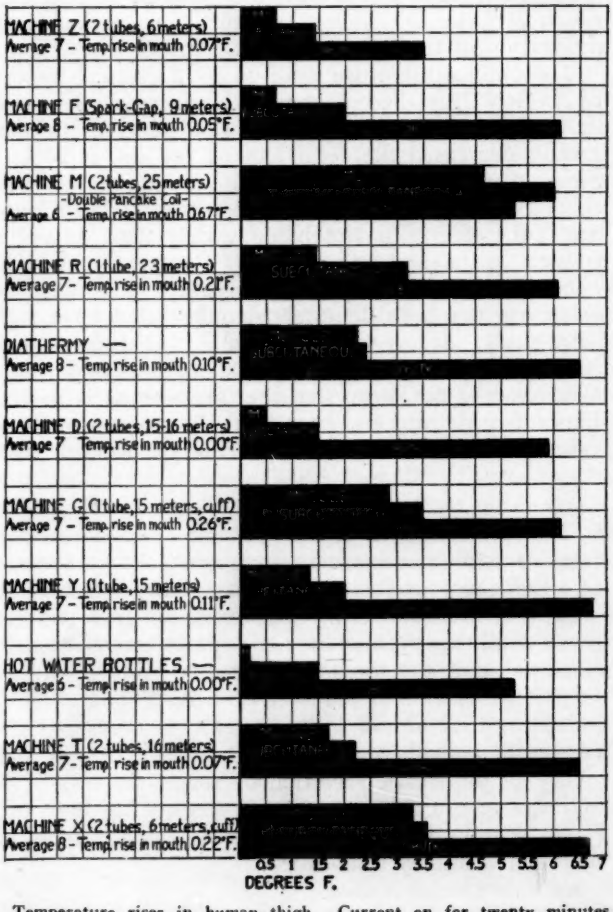
Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING ARTICLE. HOWARD A. CARTER, Secretary.

TISSUE HEATING BY SHORT WAVE DIATHERMY

BERNARD MORTIMER, PH.D., M.D.
AND
GERTRUDE BEARD, R.N.
CHICAGO

Following the technic described in a previous article,[1] nine new short wave diathermy machines were tested for their ability to heat the tissues of the human thigh. As before, the machines were used in rotation, and the dosage was regulated entirely by the tolerance of the patient. A representative of each manufacturer was present at one test to direct the usage of his machine.


MACHINE Z (2 tubes, 6 meters)
Average 7 - Temp. rise in mouth 0.07°F.
MACHINE F (Spark-Gap, 9 meters)
Average 8 - Temp. rise in mouth 0.05°F.
MACHINE M (2 tubes, 25 meters)
-Double Pancake Coil-
Average 6 - Temp. rise in mouth 0.67°F.
MACHINE R (1 tube, 23 meters)
Average 7 - Temp. rise in mouth 0.21°F.
DIATHERMY —
Average 8 - Temp. rise in mouth 0.10°F.
MACHINE D (2 tubes, 15-16 meters)
Average 7 Temp. rise in mouth 0.00°F.
MACHINE G (1 tube, 15 meters, cuff)
Average 7 - Temp. rise in mouth 0.26°F.
MACHINE Y (1 tube, 15 meters)
Average 7 - Temp. rise in mouth 0.11°F.
HOT WATER BOTTLES —
Average 6 - Temp. rise in mouth 0.00°F.
MACHINE T (2 tubes, 16 meters)
Average 7 - Temp. rise in mouth 0.07°F.
MACHINE X (2 tubes, 6 meters, cuff)
Average 8 - Temp. rise in mouth 0.22°F.
0.5 1 1.5 2 2.5 3 3.5 4 4.5 5 5.5 6 6.5 7
DEGREES F.

Temperature rises in human thigh. Current on for twenty minutes. Technic directed by the manufacturers. Dosage regulated by tolerance of patient.

The machines submitted were (wavelengths listed are those quoted by the manufacturers):

Machine X—2 tubes, 6 meters.
Machine T—2 tubes, 16 meters.
Machine Y—1 tube, 16 meters.
Machine G—1 tube, 15 meters.
Machine D—2 tubes, 15-16 meters.
Machine R—1 tube, 23.31 meters.
Machine M—2 tubes, 25 meters.
Machine F—Spark-gap, 9 meters.
Machine Z—2 tubes, 6 meters.

A conventional spark-gap diathermy machine was used for comparison.

In addition to the machines listed, it was decided to run comparable tests with two hot water bottles, one on the medial and one on the lateral aspect of the thigh. The temperature of the bottle was maintained at from 43 to 45 C. by an electrical heating element inserted through a rubber stopper.

Temperatures of the skin, of the subcutaneous tissue and of the muscle (quadriceps extensor) were taken before and after a twenty minute clinical application by the thermocouples and potentiometer described previously. Mouth temperatures were also recorded. The accompanying graph illustrates the results that were obtained.

Since several manufacturers had submitted cuff electrodes as additional equipment, two tests were carried out using cuffs with the conventional diathermy machine. The following average temperature increases were observed:

Skin, 8.8 degrees F.
Subcutaneous tissue, 9.95 degrees F.
Muscle, 8.8 degrees F.

To date fourteen short wave diathermy machines with wavelengths ranging from 6 to 25 meters have been tested for their ability to heat the tissues of the human thigh. From our results there appears to be no advantage of any one wavelength over another for heating purposes.

Aided by a grant from the Council on Physical Therapy of the American Medical Association.

From the Department of Physiology and Pharmacology and the Department of Physical Therapy, Northwestern University Medical School.

1. Mortimer, Bernard, and Osborne, S. L.: Tissue Heating by Short Wave Diathermy: Some Biologic Observations, J. A. M. A. **104**: 1413 (April 20) 1935.

Council on Pharmacy and Chemistry

PRELIMINARY REPORT OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING PRELIMINARY REPORT. PAUL NICHOLAS LEECH, Secretary.

IMMUNE GLOBULIN (HUMAN): PLACIMMUNIN-SQUIBB, AND IMMUNE GLOBULIN (HUMAN)-LEDERLE

Immune Globulin (Human) is the protein material obtained from human placentas by extraction with saline solution and refined by precipitation with ammonium sulphate. It is referred to in the literature as "placental extract." The National Institute of Health has licensed its manufacture under the name "Immune Globulin (Human)."

Two firms, E. R. Squibb & Sons and Lederle Laboratories, Inc., have presented preparations for consideration of the Council, the one under the name "Placimmunin," the other under the name "Immune Globulin (Human)-Lederle." These products will be discussed individually later in this report.

The experimental clinical work on the use of Immune Globulin (Human) has been done by McKhann and his co-workers, principally Chu. They found that the product apparently prevented (and in a few cases modified) measles in children exposed to the disease. The rationale for the use of placental extract was the natural immunity of the new-born to certain diseases, including measles.[1]

The use of the globulin in place of the serum is apparently for concentration purposes. There is probably not a great deal of difference in potency. Schick and Karelitz[2] say: "the

1. McKhann, C. F., and Chu, F. T.: Antibodies in Placental Extracts, J. Infect. Dis. **52**: 268 (March-April) 1933.
2. Schick, Béla, and Karelitz, Samuel: Studies in Prophylaxis of Measles, Am. J. Dis. Child. **47**: 1162 (May) 1934.

globulin fraction of the serum was tested. The results indicated that this fraction was at least as effective and probably slightly more effective than the serum from which it was extracted."

There has been no proof submitted to the Council to show that the globulin varies appreciably from the serum from the same source. Therefore the product is not entirely original, at least as far as is shown in the available evidence.

The first series of forty-three cases[3] is reported in groups of children treated simultaneously. A table has been made from the articles by McKhann and others.[4]

These case histories[3] show that placental extract is at least as efficacious as convalescent serum or adult whole blood for this purpose (i. e., prevention). It is also apparent that, with these dosages, prevention usually occurs even when modification is attempted. This is demonstrated clearly in the report of McKhann and Coady[4] and even in McKhann's summary;[4] prevention occurred in seven out of twenty-five cases in which modification was attempted. (N. B. Those who desire further information in regard to tabulation of preventions, modifications, and failures are referred to McKhann's latest article,[5] which was published after the formulation of this report.)

In an analysis of twenty-one partial or complete failures by McKhann,[4] it is pointed out that the five modifications marked *a* were "early cases treated when preparations and dosages were very varied." In regard to the sixteen other results thus classed, marked *b*, he states that they "occurred in attempts to determine adequate dosage of refined preparations in relation to time of administration." It is also evident that the unfiltered preparations are more potent than the filtered.

The reason for the development of this product is apparently the limited availability of convalescent serum and the feeling that placentas will be an adequate source for these immune factors.

The Council is of the opinion that the available evidence is insufficient on which to base recommended dosages, especially when those dosages are specifically designated as adequate for prevention or for modification. It would be preferable if clinical evidence from other sources were available to substantiate these dosages. The results were not especially uniform in obtaining modification when it was desired.

There are many factors that go to make up the adequate dose which will modify and yet prevent typical measles.

The intimacy of exposure, the length of exposure, the stage of the disease at the time of exposure, the virulence of the infection, the individual resistance, the lapse of time between exposure and immunization and the potency of the immunizing agent all influence this problem of adequate dosages to accomplish modification.

On the basis of the available data, the only indicated procedure would be the use of a dose which ordinarily or in most cases would prevent measles, other factors being equal, with the hope that modification would result in many cases for the benefit of the individual. There is no evidence at the present time to indicate reasonable assurance of prevention of typical measles under certain circumstances, if the dosages recommended for modification were used. The number of tests is as yet inadequate to permit the exact determination of the best fraction of the extract to use and the dosage required for children of various ages and at various stages of the incubation period of the disease.

The Council is informed that reactions following the injection of placental extract, although infrequent, appear to be due in large measure to the inclusion in the finished extract of variable amounts of a specific tissue protein. It is pointed out that the aging of the placentas before preparation of the extract, with the autolysis of the tissues, must be considered as a possible factor. The Council holds that commercial products should be demonstrably effective in bringing about the results claimed for them and further that they should be made as free from reactions as possible.

Placimmunin.—E. R. Squibb & Sons presented this preparation for the Council's consideration principally for approval of the name. The firm felt that additional data were necessary before the product could logically be presented to the medical profession. The Council's Committee on Nomenclature, although feeling that the term "Placimmunin" is somewhat unfortunate since it suggests that the product represents a new class of immunizing substances parallel to vaccines and the like, recommended that the name "Placimmunin" be recognized on the ground that it is fair to presume that placenta offers, at least, an additional source of the immunizing substance, the supply of which may otherwise be inadequate. The Council voted to recognize the name "Placimmunin" for the placental extract submitted by E. R. Squibb & Sons under that name provided the written consent of Dr. McKhann and his associates was secured by the firm and submitted to the Council. Subsequently the formal consent of Dr. McKhann and his associates was received by the Council.

TABLE 1.—*McKhann and Chu*

Group number	1		2		3		4		5		6		7		8	
Total number of cases	10		7		3		12		11		7		9		3	
Age limits	18 months to 6 years		3 to 10 years		1 to 3 years		2 to 9 years		3 to 9 years		10 months to 2 years		4 to 9 years		5 to 9 years	
Treated with																
Placental extract	7	..	6	..	2	..	6	..	7	..	7	..	4	..	2	1
Adult whole blood	..	3	..	..	..	..	..	..	..	4	..	..	..	5	..	..
Convalescent serum	..	..	..	..	..	..	..	6	..	..	..	..	..	..	..	..
Untreated	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..
Amount in cc.	4-10	30	5	—	3	—	5	4	6	30	6	10	4-6	33	5	6
Exposure to injection (days)	4	3	4	..	4-6	—	—	—	5	3	3-4	3	5	..	8	8
Days of exposure	1	1	—	—	—	—	—	—	2	2	—	—	—	—	8	8
Results:																
Prevention	6	..	6	..	2	..	6	6	5	3	6	1	4	5	—	1
Modification	1	3	..	..	..	..	..	..	2	1	..	..	..	..	2	..
Typical measles	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..

In the information presented by the firm there occurred the following statement:

Prophylactic: 3-5 cc. single dose;
Therapeutic: 5 cc., repeat as required.

"Therapeutic Indications: Used in children as a prophylactic and therapeutic [agent] against measles. It is standardized with diphtheria toxin. No advertising issued."

The firm has recently submitted an advertising circular for the product to which the Council's referee has found no objection. It is believed that the prophylactic dose is probably adequate to prevent measles under ordinary circumstances if the potency is equal to that of McKhann's preparation.

Immune Globulin (Human)-Lederle.—This product was submitted for the Council's consideration as a "measles modifier."

3. McKhann, C. F., and Chu, F. T.: Use of Placental Extract in the Prevention and Modification of Measles, Am. J. Dis. Child. **45**: 475 (March) 1933.

4. McKhann and Chu.[3] McKhann, C. F., and Coady, H.: Immunity in Infants to Infectious Diseases: Placental Antibodies, South. Med. J. **27**: 20 (Jan.) 1934. McKhann: Totals in table 3 (not published elsewhere).

5. McKhann, C. F., Green, A. A., and Coady, H.: Pediat. **6**: 603 (May) 1935.

In a submitted circular, the firm emphasizes the variability of adequate dosage for the modification of measles in the following statement:

"The strength of IMMUNE GLOBULIN (HUMAN) LEDERLE has been adjusted so that it is believed that 2 cc. will usually modify the attack of measles if it be injected on the sixth or seventh day after exposure.

In McKHANN'S later study, it has been found that the dose required to modify the attack without preventing it or stopping it increases according to the length of the time interval between the date of the contact (exposure to measles) and the date on which the Immune Globulin is injected.

Thus, if 2.0 cc. is the effective dose at the 7th day after contact, then 1.0 cc. should be sufficient on the 2nd or 3rd day; but 10.0 cc. *would be* needed if symptoms (fever, coryza, etc.) have been present for 2 or 3 days.

Still later experiences indicate that the dosage of the IMMUNE GLOBULIN must vary somewhat according to the intimacy of the exposure.

On the other hand, the physician must bear in mind that too large a dosage of the Immune Globulin tends to prevent the development of even the modified attack, in which event the permanent active immunity would probably not be established.

The physician should adjust the dosage in accordance with his knowledge of the circumstances. . . ."

This last statement will probably always be true as far as the actual amount required for each individual case is concerned. There should be, however, more evidence available and more proof of the adequacy of these dosages in most cases, before the physician can accurately adjust such a basic dose to meet individual requirements.

The 2 cc. trade package contains this recommendation: "To modify measles inject 2 cc. on the 6th or 7th day after exposure." This is questionable, because such procedure with this amount might be inadequate at that time to insure against typical measles (unless this commercial product is more potent than McKhann's preparation).

TABLE 2.—*McKhann and Coady*

	Total Number of Cases	Prevention of Measles	Modification of Measles	Typical Case of Measles
Placental extract to prevent	95	91	4	0
Placental extract to modify	8	5	3	0
Convalescent serum or adult whole blood	33	29	4	0
No treatment	2	0	0	2

The Council is of the opinion that the circular "Immune Globulin (Human) Lederle Measles Modifier" should be rewritten to include mention of the prevention factor and to contain more substantial evidence of adequate dosage.

In conclusion, the following points are of importance:

1. The variation in potency between placental serum and globulin is apparently not marked and has not been demonstrated.

TABLE 3.—*McKhann*

	Total Number of Cases	Prevention of Measles	Modification of Measles	Typical Case of Measles
Unfiltered placental extract to protect	95	90	5a	0
Unfiltered placental extract to modify	3	1	2	0
Refined filtered placental extract to protect	157	142	6b	9b
Refined filtered placental extract to modify	25	7	17	1b

2. The product is as efficacious for prevention as convalescent serum and is derived from a more adequate source.

3. The clinical results show sufficient evidence to warrant recommended doses for prevention; those for modification are questionable on the basis of available evidence.

4. Clinical reports from other sources in confirmation of the results are desirable.

5. The standardization of this product on the basis of its neutralizing effect on diphtheria toxin seems adequate only if there is a definite ratio between the diphtheria immune and measles immune factors in the globulin. (McKhann's latest report [5] would seem to indicate that this ratio is not definite). The standardization on the basis of a clinical trial on measles contacts does not appear to be adequate, but the details of the procedure have not been given and final judgment cannot be made until they are known.

CONCLUSION

After considering the available evidence, the Council decided that although Immune Globulin (Human) appears to be a promising immunizing agent, more evidence of its value is needed before it may be generally used by the medical profession.

The Council therefore postponed consideration of Immune Globulin (Human), and the brands submitted by Squibb (Placimmunin), and Lederle, until such further evidence is available, and authorized publication of the foregoing report.

Committee on Foods

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

RAYMOND HERTWIG, Secretary.

NOT ACCEPTABLE

LACTO-DEXTRIN

The Battle Creek Food Company, Battle Creek, Mich., submitted to the Committee on Foods a product essentially lactose, dextrin, soluble starch and lemon powder called "Lacto-Dextrin."

Manufacture.—Dextrin is prepared by diastatic enzyme hydrolysis of cooked cereal starch in a water suspension. Lactose equivalent to the dextrin yield (calculated on dry basis) is added. The mixture is dried at 42 C., admixed with an equal weight of dried lactose and 1 per cent of lemon powder, pulverized and sealed in tins.

Analysis (submitted by manufacturer).—

	per cent
Moisture	4.6
Ash	0.2
Fat (ether extract) less than	0.1
Protein (N × 6.25) less than	0.2
Reducing sugars as lactose	75.6
*Soluble starch	2.9
Dextrins (by difference)	14.4
Titratable acidity as citric acid	0.2

* Browne's Hand Book of Sugar Analysis, p. 509.

Discussion of Advertising.—The advertising presents Lacto-Dextrin as: "A special carbohydrate food for changing the intestinal flora . . . an antitoxic food . . . (it) combats autointoxication . . . is not a medicine, but . . . is most efficient for changing the intestinal flora—that is, for suppressing and destroying the poison-producing germs found in the intestinal tract. At the same time, Lacto-Dextrin builds up an army of protective or friendly germs. . . . This is nature's way of preventing and opposing many common diseases. . . . Lacto-Dextrin banishes intestinal poisons which may cause the acid condition (acid stomach) . . . changes a putrefactive flora to a normal acidophilic flora by changing the culture medium (the bowel is always a culture medium for bacteria) from one that favors putrefactive organisms to one that is agreeable to fermentative bacteria . . . when intestinal putrefaction occurs in the infant, as well as in the adult, a rational treatment is afforded in the use of Lacto-Dextrin . . . an aid in the treatment of intestinal toxemia . . . provides the proper nutrient medium for promoting the growth of the normal protective organisms which combat putrefactive bacteria in the bowel . . . can be depended on to counteract putrefactive organisms when the proper 'soil' is supplied. . . . Providing culture material for the acidophilic bacteria is an effective method of combating putrefaction, inasmuch as the two bacterial groups are antagonistic. Battle Creek Lacto-Dextrin provides the 'soil' for the development of the acid-forming bacteria which, in the proper medium, inhibit the development of the proteolytic organisms and thus restore the normal flora . . . taken in normal doses, a goodly portion reaches the colon before it can be absorbed and the protective bacteria B. Acidophilus and B. Bifidus at once begin to flourish

and soon outgrow the pernicious Welch's Bacillus, B. Putrificus and other harmful organisms. The symptoms of autointoxication begin to improve. A great burden is lifted from the liver and kidneys, and other vital organs whose function is to destroy and eliminate poisons. Headaches, bad breath, lassitude and other toxic symptoms disappear and a general improvement in health is experienced as putrefaction in the colon is gradually suppressed and the protective flora becomes dominant. . . . This is the normal way to build health."

Dose.—"HOW TO TAKE:—Begin with two tablespoonfuls dissolved in a glassful of hot or cold water three or four times daily. Gradually increase the amount to three tablespoonfuls and continue until the normal flora is restored.

"HOW MUCH TO TAKE:—If gas is produced in such quantities as to cause inconvenience, reduce the amount to a level tablespoonful or even less if necessary. Gas production is evidence that the food remedy has reached the colon where it is needed and in sufficient amount to be effective.

"WHEN TO TAKE:—Lacto-Dextrin may be taken at meals or between meals, a half hour before meals when appetite is excessive and after meals when the appetite is poor."

The implantation of acidophilic organisms in the intestine is an uncertain procedure even when large doses of acidophilic culture are fed with or without accompanying lactose. The transformation of intestinal flora merely by feeding lactose and dextrin has not been found to be beneficial except in occasional selected cases. Lactose and dextrin alone cannot create B. acidophilus. The person who is to be thus benefited must have B. acidophilus in his intestine at the start, and many people ordinarily do not harbor B. acidophilus in their intestine.

Because (1) the product Lacto-Dextrin is not considered useful in the manner portrayed in the claims and (2) the advertising to the public is of a medicinal character involving self diagnosis and self treatment, the product will not be listed among the accepted foods of the Committee on Foods.

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

GREETINGS BRAND PINEAPPLE JUICE UNSWEETENED

Distributor.—Alexander & Baldwin, Ltd., Honolulu, Hawaii.

Packers.—Kauai Pineapple Company, Kalaheo, Kauai; Baldwin Packers, Ltd., Lahaina, Maui; and the Maui Pineapple Company, Kahului, Maui (subsidiaries).

Description.—Canned unsweetened pineapple juice retaining in high degree its natural vitamin C content.

Manufacture.—Juice drained from crushed pineapple before cooking and pressed from crushed pineapple tissue is blended, "flash" processed and canned.

Analysis (submitted by distributor).—

	per cent
Moisture	85.0
Ash	0.4
Fat (ether extract)	0.01
Protein (N × 6.25)	0.3
Reducing sugar as invert sugar	9.3
Sucrose	3.8
Crude fiber	0.01
Carbohydrates other than crude fiber (by difference)	13.4
Titratable acidity as citric acid	0.9
Alkalinity of ash (cc. normal acid solution per gram ash)	10.7

Calories.—0.6 per gram; 17 per ounce.

Vitamins.—Chemical assay shows retention of about 90 per cent of the vitamin C of the fresh juice.

Claims of Distributor.—For all uses of pineapple juice. Retains in high degree the natural nutritional values of fresh pineapple juice. Good source of vitamins B and C and contains A and G.

COLONIAL BREAD LONG, SLICED AND UNSLICED

COLONIAL PULLMAN BREAD

A SPECIAL SANDWICH LOAF

Manufacturer.—Colonial Baking Company, Cedar Rapids and Des Moines, Iowa.

Description.—White breads made by the sponge dough method (method described in THE JOURNAL, March 5, 1932, p. 817); prepared from flour, water, sucrose, powdered skim milk, lard, yeast, salt, malt extract and a yeast food containing calcium acid phosphate, ammonium sulphate, sodium chloride, potassium bromate, potassium iodate and corn starch.

KRIM-KO CHOCOLATE FLAVORED DRINK

Bottlers and Distributors.—

Loud and Jackson Dairies, Inc., Jackson, Mich.
Marsh Dairy Company, Winchester, Ky.
McIrvin Dairy, Chillicothe, Mo.
Melville Dairy, Burlington, N. C.
J. M. Miller Dairy, Culver, Ind.
Miller Dairy Products Company, Metropolis, Ill.
Monticello Dairy, Inc., Charlottesville, Va.
Northern Dairy Company, Ishpeming, Mich.
Pestigo Dairy Company, Marinette, Wis.
Frank Petelinz Dairy, Newburgh, N. Y.
Pine State Creamery Company, Raleigh, N. C.
Pipkin Dairy, Lakeland, Fla.
Quality Dairy Company, Hannibal, Mo.
Riverdale Supreme Dairies, Salamanca, N. Y.
Rowan Creamery, Inc., Salisbury, N. C.
Ruff's Dairy, St. Clair, Mich.
Sanitary Milk Company, Kalamazoo, Mich.
Sebree Dairy, Canton, Ill.
Smith Dairy, Midland, Mich.
Sprague Dairy, Flint, Mich.
Steffen Ice and Ice Cream Company, Arkansas City, Kan.
Steffen Ice and Ice Cream Company, Wichita, Kan.
Torrington Creamery, Inc., Torrington, Conn.
Van Eepoel Dairy Products, Inc., Tampa, Fla.
Wauchula Creamery Company, Wauchula, Fla.

Licensor.—Krim-Ko Company, Chicago, manufactures the Krim-Ko Chocolate Flavored Drink Base and licenses its use, the name Krim-Ko, and standard advertising under definite contract conditions.

Description.—Pasteurized chocolate flavored sweetened skim milk; contains skim milk (from 0.5 to 1.5 per cent milk fat), sucrose, chocolate and cocoa, tapioca flour, salt and traces of tartaric acid and agar; flavored with vanilla, vanillin and coumarin. See Krim-Ko Chocolate Flavored Drink (THE JOURNAL, June 30, 1934, p. 2187).

BUDDIE BRAND EVAPORATED MILK

Distributor.—Howard E. Jones & Company, Baltimore.

Packer.—The Oatman Condensed Milk Company, Dundee, Ill.

Description.—Canned, unsweetened evaporated milk, the same as Oatman's Brand Evaporated Milk (THE JOURNAL, April 16, 1932, p. 1376).

---

1. HERSH'S BEST BRAND TOMATO JUICE
2. MINUTE MAN SPECIAL TOMATO JUICE
3. UNITED SERVICE BRAND TOMATO JUICE

Distributors.—1. L. F. Hersh & Brother, Elizabeth, N. J. 2. Falk & White Company, Lawrence, Mass. 3. United Service Stores, Boston.

Packer.—Vincennes Packing Corporation, Vincennes, Ind.

Description.—Pasteurized tomato juice with added salt; retains in high degree the natural vitamin content of the raw juice. The same as Alice of Old Vincennes Tomato Juice (THE JOURNAL, Feb. 20, 1932, p. 640).

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - - - CHICAGO, ILL.

Cable Address - - - - - "Medic, Chicago"

Subscription price - - - - - - Seven dollars per annum in advance

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.

SATURDAY, AUGUST 17, 1935

OUR BRITISH VISITORS

Elsewhere in this issue (Association News, page 518) appears an account of the entertainment of our British visitors, who this week passed through the United States en route to the meeting of the British Medical Association in Melbourne, Australia. Another large group of tourists made the trip by way of Canada. The group that passed through our country included not only four representatives of the official bodies of the British Medical Association but also many distinguished British physicians whose names mean much in the fields of science and medical literature, and a great number of general practitioners from various parts of the British dominion.

In New York the visitors were met on the *Georgic* by representatives of the New York State Medical Society and the American Medical Association. An official reception was held before the boat docked. They were entertained with a tour into the country under police escort and with a dinner for the leading officials on August 4. On August 5 they were shown through the leading medical institutions in New York City and also made a visit to Radio City and the music hall, ending their official visit with a luncheon at the Waldorf-Astoria. In Washington, D. C., they were received at the White House, visited all the notable buildings and were tendered a luncheon by representatives of the Medical Society of the District of Columbia and of the various official medical associations in the capital city. In Chicago the visitors were taken on a tour through the city to see the various medical institutions and were given a luncheon at the stockyards and a tea at the Edgewater Beach Hotel, completing the day with a dinner at the Hotel Stevens and with several private parties. Arrangements have also been made by the official medical organizations of New Mexico, Williams, Ariz., Los Angeles and San Francisco to provide suitably for our British guests.

Dr. E. Kaye Le Fleming, chairman of the council of the British Medical Association, Dr. G. C. Anderson, secretary, Dr. N. Bishop Harman, treasurer, and Dr. H. G. Dain, deputy chairman of the representative body, expressed the warmest gratitude for the manner in which American colleagues had made them welcome. Moreover, such noted guests as Prof. John Bright Banister, Sir Comyns Berkeley and Sir Ewen Maclean, distinguished obstetricians and gynecologists, were hearty in their praise of American advancement in these fields. Sir Henry Gauvain, noted authority on surgical tuberculosis, and Prof. Ernest William Hey Groves, author of one of the most widely used textbooks in surgery, complimented American institutions and gave demonstrations and lectures en route.

Among the noted guests in the party are George Carmichael Low, renowned for his contributions in the field of tropical medicine; Albert Clifford Morson, urologist; Sir James Purves-Stewart, neurologist; David Waterson, anatomist, and Prof. Robert Hughes Parry, medical officer of health and pathologist.

The party included also a goodly number of women physicians, distinguished ladies and charming young people.

The American Medical Association was glad to extend the hand of greeting officially to our British colleagues and to provide for their entertainment. They in turn, by the warmth of their appreciation and cordiality, did much to cement the friendship between the physicians of the two great English speaking nations.

IMMUNE GLOBULIN (HUMAN) AND MEASLES

Recently THE JOURNAL pointed out that in 1859 life, on the average, ended at 40. The intervening years have brought great advances in the prevention of disease. Adequate research applied clinically has made available many protective measures that aid in the prolongation of life. Today, life expectancy at birth is 57 years.[1] In the acquisition of these seventeen additional years of life the protection against many of the diseases peculiar to infancy, childhood and adolescence has been significant. Unfortunately, however, there has been no suitable measure for dealing with one of the most infectious of all childhood diseases, measles. Any effort to provide a satisfactory weapon with which to combat this disease or to lessen its complications is most commendable. A study of the problem by McKhann [2] and his co-workers has resulted in the discovery of a new source of immune substance that is apparently capable of modifying or preventing the disease.

The first attempt to modify measles is presumed to have been made by a German physician more than thirty years ago.[3] He employed convalescent serum in the early stages of the disease. Park and his associates

1. The Prolongation of Human Life, editorial, J. A. M. A. **105**: 202 (July) 1935.
2. McKhann, C. F., and Chu, F. T.: The Use of Placental Extract in the Prevention and Modification of Measles, Am. J. Dis. Child. **45**: 475 (March) 1933.
3. Beckman, Harry: Treatment in General Practice, Philadelphia, W. B. Saunders Company, 1931, p. 93.

were the first to make use of the serum in this country. The first published report on the procedure was made by Nicolle and Conseil.[4] Since then other workers have used convalescent serum in modifying the disease. It is frequently used today in the hope of preventing or at least modifying typical measles. The serum has the disadvantage of not being available in adequate amounts at all times.

In 1925 Tunnicliff [5] found that the serum of a goat convalescing from a reaction to the inoculation of a "green producing diplococcus" was capable of protecting rabbits against a subsequent injection of infective material from patients with measles. Even though it was not known definitely that rabbits were susceptible to human measles, this work was used as a basis for clinical study. Hoyne and Gasul [6] and later Tunnicliff and Hoyne [7] found it useful in children over 6 months of age if used before the fifth day of exposure. They stated that protection seemed assured in about 90 per cent of these cases.

McKhann and his co-workers,[8] observing the natural immunity of the new-born to various diseases, including measles, injected an extract derived from human placentas in an attempt to modify and prevent the disease. For this product they claim an adequate source at all times. Two commercial preparations of the extract (Immune Globulin [Human]) are available at present. The extract was first used by McKhann and his co-workers in institutional cases. This procedure facilitates careful clinical notes and accurate records but, as Levitas [9] points out in this issue of THE JOURNAL, it would not seem to be an accurate estimate of its usefulness. Routine hospital procedure, after the discovery of a case in the wards, and the fact that the contacts are not ordinarily intimate, results in an indefinite degree of exposure. It is generally more definite in cases seen at home, but accurate notes and records are more difficult to obtain under these circumstances. These factors are of interest, especially in view of the standardization of one of the commercial products against measles contacts. The other commercial product is tested against the diphtheria toxin neutralizing effect of the extract. McKhann's [10] latest paper suggests that this method is not entirely satisfactory, because the two immune factors are present to a different degree in different portions of the extract.

McKhann's results have been satisfactory, and the preparation holds promise of being a useful agent in the prevention and modification of measles. The Council on Pharmacy and Chemistry, in a preliminary report on Immune Globulin (Human) on page 510 of this issue of THE JOURNAL, defers consideration until more evidence is available. One of the principal questions requiring additional study is the dosage of this immunizing agent. Frequently, when McKhann [11] was attempting to modify the disease, prevention resulted; in some cases modification occurred, and occasionally typical measles developed. This is not surprising in view of the many factors involved in estimating adequate dosage, length of exposure, individual resistance, intimacy of contact, and elapsed time between exposure and injection. McKhann [10] has noted that, because of the short duration of the resultant immunity, it is doubtful whether its use to protect against measles outside of institutions, or in special cases, is justifiable. He points out that, if it is used to modify measles, a permanent immunity would probably result from the ensuing modified disease. He expresses the opinion (and notes that it is not adequately substantiated at present) that modified measles is not known to be followed by complications which render the unameliorated disease a menace.

Several instances of reactions following the use of this agent have been reported, and McKhann concludes his latest paper [10] as follows:

> Reactions following the injection of placental extract, although infrequent, appear to be due in some measure to inclusion in the finished extract of variable amounts of specific tissue protein. A method of preparation and administration of the extract to eliminate reactions is at present under investigation.

This consideration of adequate standards, of adequate dosages, and of reactions substantiates the position taken by the Council on Pharmacy and Chemistry. It is noted with interest that McKhann [10] experimented clinically with the two commerical preparations along with his own extract and its various fractions and obtained similar results with them. In the cases in which commercial products were administered, prevention occurred in 73 per cent and modification in 22 per cent. This further illustrates that adequate dosage for modification without prevention is not clearly defined. (It is not stated that modification was the object in these cases, but in view of McKhann's remarks it seems to be a logical assumption.)

Although this preparation should be of great interest to pediatricians and other physicians, its present status does not seem to warrant general use. It is hoped that additional evidence by those in a position to do adequately controlled clinical work will be forthcoming. This immunizing agent may become a useful measure in combating measles if subsequent results bear out the present evidence. If measles can be adequately and

4. Nicolle, C., and Conseil, E.: Bull. et mém. Soc. méd. d. hôp. de Paris **42**: 336, 1918.
5. Tunnicliff, Ruth: J. Infect. Dis. **37**: 193 (Sept.) 1925.
6. Hoyne, A. L., and Gasul, B. M.: Measles Prophylaxis, J. A. M. A. **87**: 1185 (Oct. 9) 1926.
7. Tunnicliff, Ruth, and Hoyne, A. L.: Prevention of Measles by Immune Goat Serum, J. A. M. A. **87**: 2139 (Dec. 29) 1926.
8. McKhann, C. F., and Chu, F. T.: Antibodies in Placental Extract, J. Infect. Dis. **52**: 268 (March-April) 1933.
9. Levitas, I. M.: Treatment, Modification and Prevention of Measles by Use of Immune Globulin (Human), this issue, p. 493.
10. McKhann, C. F.; Green, Arda A., and Coady, Harriet: Factors Influencing the Effectiveness of Placental Extract in the Prevention and Modification of Measles, J. Pediat. **6**: 603 (May) 1935.
11. McKhann, C. F., and Coady, Harriet: Immunity of Infants to Infectious Diseases: Placental Antibodies, South. M. J. **27**: 20 (Jan.) 1934.

safely controlled, an advance will have been made against the ravages of a disease the sequelae of which may be more severe than the disease itself, especially in infants.

THE PAN-AMERICAN MEDICAL ASSOCIATION

On August 2 the Pan-American Medical Association completed its sixth cruise to South America. The itinerary included brief visits to Nassau, Jamaica and Curaçao, more extended visits to Rio de Janeiro and São Paulo, and again brief visits to Trinidad, Puerto Rico and Bermuda. The visit of more than a hundred American physicians to our South American neighbors must result in benefit to international relations and acquaint the South American countries more fully with the medicine of the United States. Moreover, opportunity was given to the American visitors to obtain an insight into the medical institutions and to some extent into the nature of practice of the countries visited.

The participants in the cruise were cordially greeted and more than welcomed in each of the countries at which the *Queen of Bermuda* called. In all the British territories the governors arranged for official receptions, and in Brazil the president took part in the opening session. Moreover, the participants in the cruise provided for themselves a scientific program that included the presentation of some two hundred manuscripts, motion pictures and graduate lectures. Almost universal satisfaction was expressed by the participants of the cruise in both the scientific and the social functions.

One of the difficulties of a congress of this type is the securing of adequate official representation from the medical professions of each of the nations involved. Dr. Chevalier Jackson, president of the cruise, presented to the organization a gavel containing pieces of wood from each of the twenty-two nations holding membership in the Pan-American Medical Association and expressed the wish that all these nations might be more closely united, as symbolized by the circle of silver enclosing the gavel. Yet on the cruise itself only Chili, Mexico, Brazil, Cuba, Canada and the United States were represented by membership. It might be more conducive to the purposes of the organization if the national medical organization of each of the countries concerned were invited to delegate an official representative for such a congress and if only these representatives were to represent the respective nations on official occasions. Many papers, particularly those on tropical medicine, were contributed by authors who were not themselves present. From the scientific point of view, little is gained by reading such papers in an audience and discussing them in the absence of the authors.

On previous cruises as many as from 400 to 500 physicians have participated. The cruise to Brazil involved five weeks of travel, which no doubt diminished the total number of those taking part to approximately 125 physicians.

The trip more than repaid those who had opportunity to visit the medical institutions of Brazil and Puerto Rico. The Oswaldo Cruz Institute in Rio de Janeiro is one of the finest and best equipped institutions for research in tropical diseases available in the world. The International Health Board occupies a palace formerly used by a mistress of the king of Brazil and there conducts exceedingly interesting work in the prevention and control of yellow fever. The medical school in Rio de Janeiro educates a great number of young men in medicine but on cursory inspection fails to measure up to the class A medical colleges of the United States. Its structure and equipment are lavish, but the ages of the students, the quality of the teaching, and the library and laboratory service are hardly on a par with American standards. The hospitals afford opportunity, however, to see rare conditions not usually seen in the United States and particularly an extensive service in dermatology and the venereal diseases. São Paulo by contrast has a most modern medical school, marvelously equipped through the beneficence of the Rockefeller Foundation. Here the quality of instruction and equipment are excellent. Moreover, there is adjacent to the medical school the Instituto Oscar Freire, a most modern institution for the investigation of legal medicine. This institution provides extensive exhibits in the identification of wounds, stains, hair and similar materials associated with crime; it provides for the study of bullets, fire arms, knives, ropes and other materials used in crime. There are postmortem records covering twenty years, adequately indexed. There is a library of legal medicine and a complete setup for preparation of donors for blood transfusion. Moreover, there is near to São Paulo the Institute of Butantan, an institute of experimental medicine under the direction of Professor Amaral. Here is a complete arrangement for the cultivation of snakes and the preparation of antivenins. Also special investigations of spotted fever and other tropical disorders are conducted, and the institute provides the usual antitoxins and biologic preparations used in the attack on infectious diseases. So complete is this plant that it raises all the animals used in experimental medicine as well as pedigreed horses and other stock. It provides complete botanic and agricultural setups and a cooperative store and school for all the employees. This institution is also no doubt unique among similar institutions throughout the world.

The Brazilian medical profession received the American tourists with open arms, provided lavishly for their entertainment, and arranged for decorations and diplomas for many of the officers and some of the distinguished members of the cruise.

Many years ago Paracelsus stated his opinion that a physician does not learn by sitting at home behind the stove but by traveling about in other places to see what is being done. The tradition of travel for education in medicine has persisted from the earliest times.

There are trends which indicate to the world the places in which medical education and investigation are advancing; these places thereby become the centers of graduate education. From time to time Germany, Austria, France, Belgium, Alexandria in Egypt, Greece, England, Ireland and various other countries have held their place in the sun. Today many specialties and surgery particularly are studied in the United States. The more frequent interchange of visitors between the United States and the South American countries must result in good for both. For many years the majority of South Americans have gone for education and travel to Europe. A realization by them of what the United States has to offer, a realization by Americans of what the southern half of the American hemisphere has to offer, and the extending of a gesture of friendliness bring about a better understanding not only among physicians but also among all the people of all the American nations.

Current Comment

FROZEN MONKEYS

When the weather gets hot the news gets low; then the newspapers begin to indulge themselves in the vagaries of the pseudoscientists. Thus the big story of last week concerned an experiment said to be performed in California—it would be California—in which a "scientist" claimed to be able to freeze living animals solid and then to restore them to life. The story attracted added attention when volunteers offered themselves for human experiment. Eventually newspapers began to inquire into the antecedents of the "scientist." The records of the American Medical Association indicate that "Dr. Ralph Stanley Willard" is actually not a doctor at all, although he has claimed at various times to have been graduated from Columbia University and from the "Tiflis University College of the City of New York" (?). There seems to be no record of such a school. Indeed, there is no actual evidence that "Dr. Ralph Stanley Willard" was ever in any school of medicine. The records of the American Medical Association reveal the interesting fact that Mr. Willard is presumably a chemist and that in Kansas City in 1927 he was associated with the promotion of the Cunningham tank treatment for many diseases. Moreover, "Dr. Ralph Stanley Willard," who is now called an "obscure Russian scientist," claimed at that time to be actually Prince Raphael Napoleonovitch Lubomirsky and that he was descended from a French marquis who had been left in Moscow by Napoleon. He appeared again in the records in May 1933, when he was convicted in California of violation of the medical practice act and sentenced to spend 150 days and nights in the hoosegow or pay a fine of $150 and later placed on one year probation. It is perhaps not extraordinary that the newspapers should accept his tales of extraordinary experimentation without any investigation of his status as a scientist or without any certainty that he had actually performed the experiment reported. There are some investigators who are convinced that the old process known as substitution or sleight of hand was involved in the production of a live monkey in place of the frozen animal, which "Doctor Willard" claims spent three days in the refrigerator. No doubt the volunteer, said to be one Stephen Simkhovitch, a movie writer—it would be a movie writer—will be prevented by the authorities from submitting himself to the congealing process, even though his fiancée has said the experiment is satisfactory to her. Perhaps she likes them cold! But, no doubt, also the California authorities will express themselves with sufficient urgency on the subject to make unnecessary the subsequent trial for murder should the "doctor" proceed with his experiment. According to the newspaper reports, three hundred additional human Californians volunteered themselves for the ordeal. Students of psychology may make their own comments.

MALARIA IN A VILLAGE

An epidemic of malaria recently occurred in a village 30 miles from Cleveland, in which there had not been a case of malaria reported since the health district was organized fifteen years ago. While the evidence as to the original infected person in the outbreak is not complete, some interesting facts are known. A local resident was reported to have had malaria in Florida a few months before returning to this village. On two occasions during the epidemic, however, this person's blood smears were negative for malaria parasites and he lived in a part of town not affected by the epidemic. It seems unlikely that he was the immediate source of the infection. The first person to have malaria in the outbreak was a section hand who had been ill for two months with recurring chills. He lived near a pond in an unscreened shanty near the center of the area affected by the epidemic. A majority of the total of thirty-seven patients lived within a mile of this pond. Hoyt and Worden [1] report that a mosquito survey made at this time showed Anopheles punctipennis in abundance along the river which runs by the village. Anopheles quadrimaculatus, however, was found in the homes of three malaria patients, and this species of mosquito, it is believed, was the responsible transmitting agent. By oiling the breeding places of mosquitoes and by requiring patients to stay within screened enclosures until four negative blood smears, taken twenty-four hours apart, were obtained, the health commissioner promptly had the outbreak under control. This epidemic probably was not caused by transmission from a local resident. There are many other communities in the United States which are similarly in danger of an outbreak of malaria. They have a pond or swamp where mosquitoes breed and some of them have also the mosquitoes that transmit malaria. When a malaria-infected person visits these communities the stage will be set for an outbreak of malaria. Perhaps a stop in town just long enough to have lunch or to take on motor supplies would be sufficient for the mosquitoes to find the malaria-infected visitor.

1. Hoyt, R. N., and Worden, R. D.: Malaria Epidemic in Aurora, Ohio, Pub. Health Rep. **50**: 895 (July 5) 1935.

Association News

BRITISH PHYSICIANS VISIT UNITED STATES EN ROUTE TO AUSTRALIA

Fifty-five British physicians, with members of their families making a group of 110, visited New York, Washington, Chicago, Albuquerque, the Grand Canyon, Los Angeles and San Francisco between August 4 and 14 on their way to the annual session of the British Medical Association in Melbourne, Australia, in September. On their arrival in New York on the S. S. *Georgic*, Sunday, August 4, the visitors were met by Drs. Morris Fishbein and Austin A. Hayden, Chicago, and Arthur W. Booth, Elmira, N. Y., representing the American Medical Association, and by Drs. Frederic E. Sondern, New York, and Arthur J. Bedell, Albany, president and immediate past president, respectively, of the Medical Society of the State of New York. Sunday afternoon the guests were taken by motor to Grasslands Hospital, Valhalla, N. Y., with a special police escort. Monday, August 5, was spent in visits to the Columbia University-Presbyterian Hospital Medical Center, the New York Hospital-Cornell Medical Center, the Rockefeller Institute for Medical Research and other points of interest, with a luncheon at the Waldorf-Astoria. The following two days, Tuesday and Wednesday, the party saw the sights of Washington, D. C., and Mount Vernon. They were received at the White House and entertained at a reception at the British embassy. They were also guests at a luncheon at the Mayflower Hotel, at which officials of the Army and Navy medical corps, the U. S. Public Health Service, the British embassy and the Medical Society of the District of Columbia were hosts. Arriving in Chicago, August 8, the British visitors spent the day viewing places of interest in the city accompanied by Dr. Hayden, who was in charge of arrangements for the day; Dr. Olin West, Secretary of the American Medical Association; Dr. Fishbein; Dr. Thomas P. Foley, president-elect, and Dr. Robert Hayes, secretary of the Chicago Medical Society; and Dr. Lemuel E. Day, member of the council of the Illinois State Medical Society. At the Union Stockyards Mr. G. H. Swift, together with medical and other officials of the firms of Swift and Company, Armour and Company and Libby, McNeill and Libby were hosts at a luncheon for the visitors. At a tea at the Edgewater Beach Hotel Mr. Robert Ross, acting British consul in Chicago, and representatives of the various official bodies made addresses, to which Dr. Ernest Kaye Le Fleming, chairman of the council of the British association, responded. In the evening the party was entertained at dinner at the Stevens Hotel, during which there was cabaret entertainment; later individual members of the group were guests at private parties. During the day Prof. Ernest W. Hey Groves operated at Cook County Hospital. Sir Comyns Berkeley, Sir Ewen MacLean and Prof. John Bright Banister visited the radium centers at Michael Reese Hospital and the Chicago Lying-In Hospital.

At midnight they departed on a special train for Albuquerque, N. M., where they were to be entertained by the Bernalillo County Medical Society, Saturday, August 10, with visits to the University of New Mexico and the Indian village of Isleta. The next day was spent at the Grand Canyon as guests of the local medical society. Thence the British physicians were to go to Los Angeles for the day and night of August 12, with the Los Angeles County Medical Association as hosts. Tuesday, August 13, they were to take the daylight coast line trip to San Francisco, where the San Francisco County Medical Society and the California Medical Association were to entertain them with sightseeing and a luncheon at the Palace Hotel. In the afternoon they were scheduled to embark on the S. S. *Aorangi* for Australia, stopping one day at Honolulu, where the Hawaii Territorial Medical Association and the Honolulu County Medical Society have planned entertainment including sightseeing trips around the island of Oahu and a dinner at the Royal Hawaiian Hotel, with special Hawaiian music and dancing, if time is available before the boat sails.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Increase in Malaria.—An appropriation of $1,967,980 has recently been approved by President Roosevelt to finance a drainage program in all counties of Alabama for the control of malaria. Reports indicate an alarming increase in the disease, despite the elaborate program of malaria control carried out in the state last year, 1,132 cases having been recorded during the first five months of 1935 as compared with 514 for the similar period in 1934. This is the first time in ten years that so much malaria has been reported for a corresponding period, it is said.

State Health Conference.—All city and county health workers in the state met in Montgomery, July 22-23, for a conference called by the state health officer, Dr. James N. Baker. Governor Graves opened the meeting and speakers included:

Dr. Calvin C. Applewhite, U. S. Public Health Service, Training of Personnel.
Dr. Daniel G. Gill, Montgomery, Tuberculosis and Hookworm.
Mr. G. H. Hazlehurst, Montgomery, Malaria Control and Sanitation.
Dr. Burton F. Austin, Montgomery, Maternal, Infant and Child Hygiene.

CALIFORNIA

Dr. Porter's Term Extended.—At a recent meeting of the board of regents in Los Angeles, the term of Dr. Langley Porter as dean of the University of California Medical School, San Francisco, was continued one year. Dr. Porter's normal retirement period was reached this year, it was stated. He has been dean of the medical school since 1927.

Graduate Courses.—The Stanford University School of Medicine in cooperation with the San Francisco Department of Public Health will conduct a series of graduate courses for practicing physicians, September 10-13. Morning lectures will review cardiology, diseases of the chest and obstetrics and gynecology, while afternoons will be devoted to medical aspects of syphilis and its treatment, proctology, surgical anatomy with special reference to operative approach and technic, and ophthalmology. The first evening session will be given over to a consideration of nephritis and hypertension, the second to glandular diseases and their treatment, and the third to gastrointestinal disease.

COLORADO

Hospital News.—An appropriation of $691,700 has been allotted to the Fort Lyon Veterans' Hospital by the Veterans' Administration, for additions.

State Board Election.—At a special meeting of the Colorado State Board of Medical Examiners, Denver, recently, Drs. Vardry A. Hutton, Florence, was chosen president; Nolie Mumey, Denver, vice president, and Harvey W. Snyder, Denver, secretary-treasurer.

Radiologic Conference.—The Denver Radiological Club will hold a midsummer radiologic conference, August 28-30. The program will comprise symposiums on neoplastic diseases, development, anomalies and diseases of the spine, and pulmonary and gastro-intestinal diseases. Speakers will include Drs. Benjamin H. Orndoff, Chicago, secretary of the American College of Radiology; William Edward Chamberlain, Philadelphia, professor of radiology and roentgenology, Temple University School of Medicine; James M. Martin, Dallas, Texas, professor of radiology, Baylor University School of Medicine, and Dr. Henry J. Ullmann, Santa Barbara, Calif. In addition, local physicians on the program include Frederick E. Diemer, president of the Denver Radiological Club; Sanford M. Withers, Harry S. Finney, Josiah N. Hall, Ernst A. Schmidt, Henry Sewall, Luther R. Moore, Leonard G. Crosby, Samuel B. Childs, Kenneth D. A. Allen, William W. Wasson, Hamilton I. Barnard, Frank B. Stephenson and John S. Bouslog, all of whom are from Denver. A joint meeting will be held with the Medical Society of the City and County of Denver, August 28, at which Drs. Chamberlain and Ullmann will be the speakers. Dr. Harmon P. Brandenburg, Denver, will address the banquet.

DISTRICT OF COLUMBIA

Medical Bills in Congress.—H. R. 8552, introduced by Representative Smith, Virginia, proposes to direct the Commission on Licensure to Practice the Healing Art in the District of Columbia to issue a license to practice the healing art in the District of Columbia to Dr. Leo Solet.

GEORGIA

Glynn County Wins Prize.—Dr. Millard E. Winchester, Brunswick, commissioner of health of Glynn County, was guest of honor at a dinner given by the Brunswick Board of Trade, June 28, in recognition of his county's winning first prize in the southeastern division of a rural health contest sponsored this year by the U. S. Public Health Service and the Chamber of Commerce of the United States. A plaque has already been presented to the county, commemorating the accomplishments in health conservation for 1934. Speakers at the dinner included Dr. Thomas F. Abercrombie, director of public health, who served as the first health officer of Glynn County. This county was the first in the state to have the services of a paid health officer.

Society News.—Dr. Robert B. McIver, Jacksonville, Fla., was chosen president of the Chattahoochee Valley Medical Association at its annual meeting at Radium Springs, near Albany, July 9-11. Other officers elected are Drs. John C. Keaton, Albany, and Edward S. Sledge, Mobile, Ala., vice presidents, and Frank K. Boland, Atlanta, secretary-treasurer. The next annual session will be at Radium Springs. Included on the program were the following physicians:

David Henry Poer, Atlanta, Carcinoma of the Thyroid.
Thomas L. Ross Jr., Macon, Peripheral Vascular Disease, with Special Reference to the Lower Extremities.
Willis P. Jordan, Columbus, Urologic Disorders Undiscovered in Physical Examinations.
Frank K. Boland, Atlanta, Surgical Treatment of Pulmonary Tuberculosis.
Roy R. Kracke, Emory University, Agranulocytosis: Etiology, Diagnosis and Treatment.
Harold P. McDonald, Atlanta, Suction of Undescended Testicle.

The William J. Love Lectureship was created at this meeting in honor of the late Dr. Love, Opelika, who had been secretary of the association since its organization.

ILLINOIS

Tests for Skill of Drivers at State Fair.—Medical examination of adults for heart impairment and tests to determine the skill of automobile drivers will be offered free to all visitors to the state fair in Springfield, August 17-23, as special features of the exhibits on health and safety, according to the state health department. Each person who takes the test will receive a record showing his reaction time and folder indicating a safe speed for him, together with driving rules. The Sangamon County Medical Society is cooperating in the heart examinations, and Dr. John J. McShane, chief of the state division of communicable diseases, will be in charge.

Gastro-Enteritis Due to Contaminated Milk.—More than twenty cases of gastro-enteritis at Enfield recently were traced to a contaminated raw milk supply, the state health department reports. The milk from three cows was served to the members of a women's missionary society. Some of the milk was given to friends in the community and the remainder was used by the family. Within four hours after drinking the milk fourteen of the twenty society members, four of the family members and several friends were seized with paroxysms of vomiting followed by diarrhea. Tests showed the milk to be heavily infected with staphylococci. The outbreak subsided when use of the milk was discontinued.

IOWA

Rocky Mountain Spotted Fever.—Four cases of Rocky Mountain spotted fever have been reported to the state health department thus far in 1935, including one death (THE JOURNAL, July 27, p. 287). The counties involved, Linn, Lee, Poweshiek and Union, are widely separated in the southern half of the state. The death was that of a little girl in Linn County.

KANSAS

Society News.—At a joint meeting of the Brown County Medical Society and the newly organized Northeast Kansas Dental Association in Hiawatha, June 28, speakers were Dr. Charles L. Hustead, Falls City, on "Management of Postoperative Complications," and Mr. A. L. Peterson, Topeka, "Medical-Dental Jurisprudence."——Dr. Robert M. Brian, El Dorado, among others, addressed the Butler-Greenwood County Medical Society in El Dorado on "Encephalitis Lethargica, Its Complications and Sequelae."——Dr. Robert L. Ferguson, Arkansas City, discussed medical care of the indigent before the Cowley County Medical Society in Arkansas City, June 20.——At a meeting of the Crawford County Medical Society in Pittsburg, June 27, Dr. Roletta O. Jolly-Fritz spoke on dementia praecox.——Papers were presented before the Dickinson County Medical Society in Hope, July 18, by Drs. Lawrence G. Heins, Abilene, and Theodore Kroesch, Enterprise, on "Diseases of the Coronary Arteries" and "State Medicine," respectively.——The Golden Belt Medical Society was addressed at its quarterly meeting in Manhattan, July 11, by Drs. Walter M. Reitzel, Manhattan, on "Bladder Neck Obstructions"; Emmanuel Raymond Gelvin, Concordia, "Transurethral Prostatectomy, Its Progress and Possibilities"; Ray M. Balyeat, Oklahoma City, "Therapeutic Value of the Intratracheal Use of Iodized Oil in the Treatment of Intractable Asthma," and Allen B. Kanavel, Chicago, "Diagnosis and Treatment of Infections of the Hand."

LOUISIANA

Personal.—The completion of thirty-five years' practice in Gretna by Dr. Charles F. Gelbke was observed with a reception recently held by his friends in Jefferson Parish. Among other gifts, he received a bronze statue and an automobile. Dr. Gelbke has served as mayor of Gretna and coroner of the parish.——Dr. Bjarne Pearson, Taylors Falls, Minn., has been appointed assistant professor of pathology at the Louisiana State University Medical Center, New Orleans.

Dr. Matas Resigns from Touro Infirmary.—Dr. Rudolph Matas has resigned as chief of the department of surgery at Touro Infirmary, New Orleans, and Dr. Isidore Cohn has been appointed to succeed him. It was stated that Dr. Matas wished "to free himself of administrative and teaching duties so that he would have more time to devote to strictly professional activities." Following his resignation, Dr. Matas was named honorary chief of the surgical service at the infirmary. A native of New Orleans, Dr. Matas now is 74 years old; he graduated from Tulane University of Louisiana School of Medicine in 1880. He was professor of surgery at Tulane from 1895 until 1927. He has been chief senior surgeon at Touro Infirmary since 1905. Dr. Matas was vice president of the American Medical Association in 1921 and again in 1932. Last year the Violet Hart Fund established a medal in his honor at Tulane University to be awarded to the "North American surgeon who has contributed outstanding work in vascular surgery." In 1926 Dr. Matas was presented with the Henry Jacob Bigelow Medal of the Boston Surgical Society. In 1930, in celebration of his seventieth birthday and marking his fiftieth anniversary in the practice of medicine, a festschrift was published in his honor, containing contributions of professional friends and colleagues. Dr. Cohn is clinical professor of surgery at Tulane and professor of surgery at the graduate school and has been associated with Dr. Matas at Touro Infirmary for many years. He is 50 years of age and graduated from Tulane in 1907.

MINNESOTA

Physicians' Hobby Exhibit.—An extensive display of physicians' hobbies was a feature of the recent annual meeting of the Minnesota State Medical Association in Minneapolis, June 24-26. Grouped under the following headings, exhibits included:

Anecdotes and Epigrams: Dr. Charles G. Sutherland, Rochester.
Archery: Drs. John M. Armstrong, St. Paul, and Austin V. Denman, Mankato.
Architectural Drawings: Dr. Leo M. Crafts, Minneapolis.
Big Game: Drs. Kenneth Bulkley, and Frederick H. K. Schaaf, Minneapolis; Austin V. Denman and John T. Schlesselman, Mankato; Edmund L. Warren, St. Paul.
Birds: Dr. Thomas S. Roberts, Minneapolis.
Boats: Dr. Richard O. Leavenworth, St. Paul.
Books: Drs. Armstrong and Gilbert G. Cottam, Minneapolis.
Charcoal Sketches: Dr. David L. Tilderquist, Duluth.
Clay Models: L. B. Franklin, student, University of Minnesota Medical School.
Drawings: Dr. Frederick A. Willius, Rochester.
Feeding Bottles: Dr. Robert Rosenthal, St. Paul.
Guns: Drs. Bulkley, Paul F. Dwan, Schaaf; Louis B. Wilson, Rochester.
Crafts: Dr. John S. Holbrook, Mankato.
Oil Paintings: Drs. Russell T. Costello, Rochester; Arthur N. Collins, Duluth; Schlesselman and Luisa Kerschbaumer, St. Peter.
Photographs: Drs. Walter C. Alvarez, Rochester; Horace G. Scott, Arthur T. Henrici, Erling S. Platou, Minneapolis; Eric P. Quain, Bismarck, N. D.
Stamp Collection: Dr. Carlos W. del Plaine, Minneapolis.
Miscellaneous: Drs. Bulkley, Schaaf; Richard O. Leavenworth and Edmund L. Warren, St. Paul; Gordon B. New, Rochester.
Music: Dr. Virgil J. Schwartz, Minneapolis.

The Minneapolis Rifle Club also furnished an exhibit; physician members were Drs. Frederick A. Olson and Arthur C. Skjold. Several dentists also participated in the hobby show.

MONTANA

Society News.—Dr. George E. Brown, Rochester, Minn., addressed physicians of Great Falls and vicinity, July 3, on cardiovascular diseases.

NEBRASKA

Personal. — Dr. Francis W. Heagey, Omaha, was elected president of the Nebraska Tuberculosis Association at the recent annual meeting.——Dr. Victor E. Levine, professor of biological chemistry and nutrition, Creighton University School of Medicine, Omaha, is in Alaska continuing his studies of the Eskimo. He will make observations in the region north of Nome, including Teller, Cape Prince of Wales, Deering, Kiwalik, Shishmaref, Kotzebue, Point Hope, Point Lay, Wainwright and Point Barrow. This is Dr. Levine's third trip to the arctic.

NEW MEXICO

Position Open for Health Officer.—Dr. J. Rosslyn Earp, state health officer, announces that an examination to qualify for the position of district health officer will be held at Santa Fe, September 7. Dr. Owen E. Puckett, Carlsbad, has been appointed health officer of a district made up of Eddy, Lea and Chaves counties.

NEW YORK

Hospital News.—Dr. Clarence H. Bellinger, assistant superintendent at Utica State Hospital, Utica, has been appointed superintendent of the Brooklyn State Hospital. He will succeed Dr. George W. Mills, who will become superintendent of the Creedmor State Hospital, formerly a division of the Brooklyn institution but recently made separate by legislative enactment.

Typhoid Carriers. — Thirty-nine chronic typhoid carriers were discovered during 1934 by the New York State Department of Health, making a total of 335 in the state, exclusive of New York City, where there were 352, and state institutions, in which there were fifteen. Twenty-two of the newly discovered carriers were housewives, seven were in the milk industry, one was a hotel cook and nine were in occupations not connected with food. All were more than 20 years old, the oldest 78.

New York City

Hospital News.—A new private pavilion with a capacity of seventy-five beds is to be built at Columbus Hospital Extension at a cost of $170,000.——Dr. Kurt Goldstein, formerly of Frankfurt and Berlin, Germany, has been appointed attending physician on the neurologic division of Montefiore Hospital and will be in charge of a new neurophysiologic laboratory.

Regulations on Sale of Vitamin D Milk.—In order that consumers may know what kind of vitamin D milk they are receiving, the department of health has recently issued regulations requiring complete information to be printed on the caps of bottles. This must include not only the method that has been used in fortifying the milk but also the number of units of vitamin D per quart. The board has fixed the following minimum vitamin D content for the three kinds: if produced by feeding irradiated yeast to cows, 430 units per quart; if produced by direct irradiation with ultraviolet rays or carbon arc ray lamps, 135 units; if produced by the addition of concentrate, 400 units. Physicians should give instructions as to which kind of vitamin D milk they wish their patients to receive, the health department bulletin suggested.

OHIO

Personal.—Dr. Charles O. Munns, Oxford, was guest of honor at a meeting of the Oxford Kiwanis Club, July 23, celebrating his completion of fifty years of medical practice.——Dr. J. Will Payne, Willowwood, has been appointed health officer of Lawrence County.——Dr. Gail E. Miller, Lima, has been named health officer of Allen County on a part time basis to succeed Dr. John J. Sutter, who served sixteen years as a full time officer.——Dr. Howard Dittrick, Cleveland, has been named an official delegate from the United States to the Tenth International Congress of the History of Medicine in Madrid, September 23-29. He will read a paper on "Early American Devices for Infant Feeding."

Society News.—Speakers at a meeting of the Adams County Medical Society, West Union, June 26, were Drs. William B. Morrison and Frank W. Harrah, Columbus, on "Surgical Treatment of Lesions of the Gastro-Intestinal Tract" and "Transurethral Resection of the Prostate," respectively, and Samuel C. Clark, Cherry Fork, "Mumps."——Dr. John A. Caldwell Jr., Cincinnati, addressed the Butler County Medical Society, Hamilton, June 12, on "Acute Traumatic Bone Atrophy."——Dr. Joseph D. Heiman, Cincinnati, addressed the Clinton County Medical Society, Blanchester, on "Uterine Bleeding."——At a meeting of the Highland County Medical Society, Hillsboro, June 5, Dr. Wells H. Teachnor Jr., Columbus, spoke on "Mesenteric Adenitis." — Dr. Forest William Cox, Dayton, was guest speaker at a meeting of the Greene County Medical Society, Xenia, July 3, on "Common Diseases of the Lower Third of the Colon."——Drs. Eugene F. McCampbell and Sylvester J. Goodman, Columbus, addressed the Auglaize County Medical Society, Minster, June 27, on "Heart Disease in Pregnancy" and "Common Toxemias of Pregnancy," respectively.——Dr. Milton B. Cohen, Cleveland, addressed the Trumbull County Medical Society, Warren, June 19, on "Allergic Influences on Diseases."——Drs. Samuel L. Meltzer, Portsmouth, discussed x-ray and radium treatment of cancer at a meeting of the Hempstead Academy of Medicine, Portsmouth, July 8. — Dr. Charles A. Doan, Columbus, addressed the Tuscarawas County Medical Society, Uhrichsville, July 11, on anemia.

PENNSYLVANIA

Symposium on Endocrinology. — The Montour County Medical Society sponsored a symposium on the thyroid gland and the endocrine system at the Geisinger Memorial Hospital, Danville, July 25. Dr. Harold L. Foss conducted an operative clinic in the morning and Dr. Richard B. Cattell, Boston, a dry clinic in the afternoon. The following program of papers was presented:

Dr. Henry F. Hunt, Danville, Pathology of the Thyroid Gland.
Dr. Carl E. Ervin, Danville, The Heart in Hyperthyroidism.
Dr. Cattell, Hyperthyroidism—Its Diagnosis and Treatment.
Dr. George M. Curtis, Columbus, Ohio, Significance of the Iodine Content of Human Blood.
Edward C. Kendall, Sc.D., Rochester, Minn., Historical Outline of Treatment of Exophthalmic Goiter; Prophylactic Use of Iodine; Production of Goiter Through Administration of Organic Iodides; Recent Work on the Thyrotropic Hormone; Relation Between the Thyroid and Suprarenal Glands.

RHODE ISLAND

Medicolegal Society Fifty Years Old.—The Rhode Island Medico-Legal Society celebrated its fiftieth anniversary at a dinner at the Narragansett Hotel, June 27. Speakers were Dr. Fritz W. Gay, Malden, president, Massachusetts Medico-Legal Society; Dr. Timothy Leary, Boston, medical examiner of Suffolk County, and Charles A. Walsh, associate justice of the Superior Court of Rhode Island. Officers elected were Dr. Benjamin F. Tefft, West Warwick, president; Sigmund W. Fisher Jr., Providence, vice president, and Dr. Jacob S. Kelley, Providence, secretary.

TENNESSEE

Rockefeller Gift to Vanderbilt University.—The General Education Board, New York, has made a gift of $2,500,000 to Vanderbilt University for the school of medicine, it was announced July 1. About $700,000 will be used for buildings and equipment and the remainder for an endowment, it was said.

University News.—A portrait of the late Dr. William B. Rogers, at one time dean and professor at Memphis Hospital Medical College, was presented to the University of Tennessee College of Medicine, June 4, by former students and faculty of the old college. The presentation was made by Dr. Joseph A. Crisler Sr. at a meeting of the Memphis and Shelby County Medical Society and was accepted by Dr. James B. McElroy, professor of medicine. At the society meeting Dr. Giles A. Coors presented a paper on enterostomy.

WEST VIRGINIA

Society News.—Drs. Arthur A. Shawkey and Randolph L. Anderson, Charleston, addressed the Fayette County Medical Society, Oak Hill, July 16, on "Pyelonephritis in Infancy and Childhood" and "Injuries of the Spinal Column, Old and New," respectively.——A symposium on cancer was presented before the Central West Virginia Medical Society in Webster Springs, July 27, by Drs. Rome H. Walker, Benjamin H. Swint, McLeod Gillies, John E. Cannaday and J. Ross Hunter, all of Charleston.——Dr. John W. Strieder, Ann Arbor, Mich., addressed a joint meeting of the Preston and Monongalia County medical societies at Hopemont Sanitarium, July 9, on "Surgical Treatment of Pulmonary Tuberculosis."

WISCONSIN

Scarlet Fever Declines.—For the first time in two years a day passed without a new case of scarlet fever in Milwaukee, the health department reported July 25. The total number of active cases was sixty-one, as compared with 233 a year before and 1,513 February 1.

HAWAII

Cancer Survey.—Dr. John M. Flude, western field representative of the American Society for the Control of Cancer, has recently completed a cancer survey in the Hawaiian Islands. The Territorial Medical Society sponsored the survey, a report of which is not yet available.

GENERAL

Orthopedic Board Examination.—The American Board of Orthopedic Surgery announces that its next examination will be held in St. Louis in January 1936. Candidates interested in the activities of the board may obtain information by writing the secretary, Dr. Fremont A. Chandler, 180 North Michigan Avenue, Chicago. This board was incorporated in 1934 and has been approved by the Advisory Board for Medical Specialties. Besides Dr. Chandler, officers are Drs. Melvin S. Henderson, Rochester, Minn., president; Edwin W. Ryerson, Chicago, vice president, and Henry W. Meyerding, Rochester, Minn., treasurer.

Medical Bills in Congress.—*Changes in Status:* The conference report on H. R. 7260, the social security act, has been approved by the House and Senate. H. R. 8554, the Second Deficiency Appropriation Bill, has been sent to the President for his approval. This bill appropriates $21,250,000 for veterans' hospital and domiciliary facilities. H. R. 4513 has passed the House, authorizing the payment of claims for unauthorized emergency treatment of World War veterans. *Bills Introduced:* H. R. 9010, introduced by Representative Cartwright, Oklahoma, proposes to authorize an appropriation of $250,000 for the construction of a hospital for Indians at Talihina, Le Flore County, Oklahoma.

Bacteriologists Organize Branch Society.—The North Central Branch of the Society of American Bacteriologists was organized during the meeting of the American Association for the Advancement of Science at the University of Minnesota, Minneapolis, June 26, with Robert E. Buchanan, Ph.D., dean of the graduate college and director of the agricultural experiment station, Iowa State College, Ames, Iowa, as president; Dr. Arthur T. Henrici, professor of bacteriology and immunology, University of Minnesota Medical School, vice president, and Rudger H. Walker, Ph.D., Ames, secretary. The branch society includes members of the national organization and others living in Minnesota, Wisconsin and Iowa. Semiannual meetings will be held, rotating between Minneapolis, Madison and Ames. Included on the program were the following:

Halvor O. Halvorson, Ph.D., University of Minnesota, The Effect of Chance on the Mortality of Experimentally Infected Animals.
Dr. Robert G. Green, University of Minnesota, The Nature of Filtrable Viruses.
Dr. Edward C. Rosenow, Rochester, Minn., Studies on Experimental Encephalitis and Poliomyelitis.
Clifford P. Fitch, Sc.D., and Lucille Bishop, University of Minnesota, A Study of Certain Methods for the Isolation of Brucella Abortus from Milk.

Medical Papers at Chemists' Meeting.—At the summer meeting of the American Chemical Society in San Francisco, August 19-22, the following papers, among others, will be presented in the division of medicinal chemistry:

Dr. Paul J. Hanzlik and Arthur P. Richardson, San Francisco, State of Bismuth in Body Fluids and Tissues.
Drs. Jacob Arnold Bargen and Bayard T. Horton and Arnold E. Osterberg, Ph.D., Rochester, Minn., Lead in the Chemotherapy of Cancer.
Dr. Maurice L. Tainter, San Francisco, The Rôle of Chemical Structure in the Activity of Dinitrophenol Derivatives as Metabolic Stimulants.
Dr. Francis M. Pottenger Jr., Monrovia, Calif., Clinical and Experimental Observations of the Effects of Suprarenal Hormones.
Dr. Howard L. Eder, Santa Barbara, Calif., Use of Iron Therapy by the Normal Individual for the Prevention of Sunburn.
Margaret Cammack Smith, Tucson, Ariz., Relation of Diet to Fluorine Toxicities.
Dr. Herbert M. Evans, Oliver H. Emerson, Ph.D., and George A. Emerson, Berkeley, Crystalline Derivatives of an Alcohol Having Vitamin E Potency.
Chauncey D. Leake, Ph.D., San Francisco, Pharmacologic Aspects of Vitamins.

Joint symposiums will be held with the divisions of agricultural and food and biological chemistry, of which some of the papers mentioned will form a part.

Anniversary of Narcotics Limitation Convention.—Secretary of State Cordell Hull in a message to the World Narcotic Defense Association at a luncheon in New York, July 9, said that cooperation by the United States with other nations in suppression of the abuse of narcotic drugs is handicapped by the inadequacy of state laws. The luncheon was held to celebrate the second anniversary of the coming into effect of the Narcotics Limitation Convention of 1931. Fifty-four governments have ratified or acceded to the convention of 1931 and fifty-nine are parties to the Hague Opium Convention of 1912, Secretary Hull reported; there are only eight governments that participate in none of the narcotic drug conventions. To make the international agreements effective, enactment of state laws is necessary; the federal government has done all it can to meet the treaty obligations, Secretary Hull said. More than half the states have already enacted the uniform state narcotic drugs act, which is designed to fulfil the treaty obligations. Among these obligations Secretary Hull named control of the production and distribution of raw opium, limitation of the manufacture, sale, distribution and use of narcotics to medical and scientific purposes; control of the production of cannabis sativa, and restriction of the manufacture of narcotic drugs to persons, establishments and premises licensed for the purpose.

Congress of Physical Therapy.—The fourteenth annual session of the American Congress of Physical Therapy will be held in Kansas City, September 9-12, with headquarters at the Hotel Kansas Citian. An instruction course under a corps of twenty lecturers will precede the meeting, September 5-7. The formal opening of the congress will be Monday evening, September 9, when Dr. John S. Hibben, Pasadena, Calif., will be installed as president. Dr. Arthur Steindler, Iowa City, will deliver the third annual William Benham Snow lecture, on "Physical Properties of Bone." Section meetings will be held Tuesday and Wednesday mornings and the remainder of the time will be devoted to general assemblies. Among speakers on the general program are:

Dr. Ralph H. Kuhns, Chicago, Present Status of Fever Therapy for Dementia Paralytica in the State Hospitals of Illinois.
Dr. Vernon L. Hart, Minneapolis, Mechanical and Physiologic Principles Underlying Prevention of Deformity and Disability.
Dr. Theodore P. Brookes, St. Louis, Hallux Valgus: Postoperative Physical Therapy.
Dr. Lester Hollander, Pittsburgh, Treatment of Cancer of the Lip by Massive Doses.
Dr. Edward H. Skinner, Kansas City, Radium Therapy in the Curable Field of Malignancy.
Dr. Lewis J. Moorman, Oklahoma City, Intrapleural Pneumolysis.
Dr. Miland E. Knapp, Minneapolis, Treatment of Erysipelas by Ultraviolet Radiation.

Included in the program will be symposiums on electrosurgical resection of the prostate, short wave diathermy, arthritis and gynecology. Tuesday evening there will be a joint meeting with the Jackson County Medical Society, with the following speakers: Drs. Bernard Fantus, Chicago, on "Unemployability: A Medical Problem"; Franz Nagelschmidt, London, "Present Status of Physical Medicine in Treatment of Disease" and Henry W. Meyerding, Rochester, Minn., "Volkmann's Ischemic Contracture."

Boy Scout Jamboree Canceled Because of Poliomyelitis.—In a statement from the White House, August 8, President Roosevelt canceled the International Boy Scout Jamboree, which was to have been held in Washington, August 19-30, because of the outbreak of poliomyelitis in Virginia within 100 miles of the capital. Thirty thousand boys from all parts of the world were to have come to Washington. The decision was made after a conference with Surg. Gen. Hugh S. Cumming of the U. S. Public Health Service, Commissioner George Allen of the District of Columbia and James E. West, New York, chief scout executive. While the prevalence of the disease was not "unduly alarming," it was thought better not to create undue apprehension on the part of parents and of state health officers, who might fear that the disease would be brought back by returning scouts. The poliomyelitis epidemic was believed to be declining in North Carolina, where it first appeared, only thirty-seven cases having been reported from August 1 to 7. From May 1 to August 1 there were 468 cases. The outbreak appeared later in Virginia, only fifty-two cases having been reported in June as compared with 198 in North Carolina. In July, however, Virginia had 250 and North Carolina 226. From August 1 to 7 the number of cases reported in Virginia was ninety-one. It was said that the epidemic area was apparently not extending except for a slow northward spread. Dr. Alexander G. Gilliam of the U. S. Public Health Service was transferred to Virginia, July 20, after spending several weeks in North Carolina in connection with the outbreak. Midshipmen of the U. S. Naval Academy, Annapolis, Md., have been ordered not to go to North Carolina and Virginia during their annual leave from August 30 to September 27. Thirty cases were reported to the state health department of Tennessee during July, according to the Nashville *Tennessean*, July 31, a number definitely above the normal expectation. Most of these were in counties of East Tennessee near the North Carolina and Virginia borders; twelve occurred in Stewart County in the western part of the state. The Delaware State Board of Health has adopted the procedure of requiring all persons from the poliomyelitis area to register with the nearest health unit and to be examined daily for twelve days.

Government Services

Changes in Public Health Service

Passed Asst. Surg. Adolph S. Rumreich, relieved at Washington, D. C., and assigned at Moscow, U. S. S. R.

Passed Asst. Surg., Edward C. Rinck, relieved at Norfolk, Va., and assigned at Washington.

Passed Asst. Surg. Thomas B. McKneely, relieved at Washington and assigned at the marine hospital, Ellis Island.

Sr. Surg. Newton E. Wayson, relieved at Honolulu and assigned at the marine hospital, Baltimore.

Surg. Lucius F. Badger, relieved at Washington and assigned at Honolulu in charge of the leprosy investigation station.

Medical Director Ernest A. Sweet, relieved at Ellis Island and assigned in charge of the quarantine station at Gallops Island, Boston.

Sr. Surg. Harry F. White, relieved at Curtis Bay, Baltimore, and assigned at Port Townsend, in charge of quarantine station.

Surg. LeGrand B. Byington, relieved at Angel Island and assigned in charge of quarantine station at Curtis Bay, Baltimore.

Asst. Surg. John W. Oliphant, relieved at Seattle and assigned at marine hospital in Chicago.

Asst. Surg. Frederick J. Brady, relieved at marine hospital, Chicago, and assigned at marine hospital, Seattle.

Passed Asst. Surg. Mason V. Hargett, relieved at Warsaw, Poland, and assigned at Stuttgart.

Position Open in Indian Medical Service

The U. S. Civil Service Commission announces an open competitive examination for the position of area medical director in the Indian Service, Department of the Interior, at a salary of $5,600 a year. Applications must be filed with the commission at Washington, D. C., not later than August 26. At present there is a vacancy in the consolidated Navajo area and it is possible that similar positions will be created in the near future, according to the announcement. Competitors will not be required to report for examination but will be rated on education and experience. They must be citizens of the United States and graduates of recognized medical schools. In addition they must have had at least three years' experience in the fields of medicine and public health among peoples whose concepts of medical science are primitive. They must have had two years of responsible, paid, full-time administrative experience in a state or national organization of recognized influence devoted to promoting public health. A degree of doctor of public health from a recognized university may be substituted for one year of this experience. They must not have reached their fifty-third birthday. Further details and application forms may be obtained at any first class postoffice, from the commission at Washington, D. C., or from the civil service district office in any of the following cities: Atlanta, Boston, Chicago, Denver, New Orleans, New York, Philadelphia, Seattle, St. Louis, St. Paul, San Francisco, Honolulu, Balboa Heights, C. Z., and San Juan, P. R.

New Units for Food and Drug Research

Two new divisions have been organized in the Food and Drug Administration of the U. S. Department of Agriculture to conduct research on vitamins and in pharmacology, it is announced. The vitamin division will be under the direction of Elmer M. Nelson, Ph.D., recently associated with the Bureau of Chemistry and Soils. Its work will be to check the claims and help establish standards for food and drugs for which claims of vitamin potency are made. Chester D. Tolle, Ph.D., who has engaged in research on vitamin potency with the U. S. Bureau of Fisheries, has also been appointed to Dr. Nelson's staff. The pharmacologic division is headed by Dr. Erwin E. Nelson, associate professor of pharmacology of the University of Michigan Medical School, Ann Arbor, who was appointed principal pharmacologist of the Food and Drug Administration last January. Dr. Nelson is on leave of absence from the university until the beginning of the academic year 1936-1937. In addition to the original staff of the pharmacologic section, the following have been newly appointed: Dr. Edward W. Wallace, from the University of Chicago; Dr. George E. Farrar Jr., University of Michigan, Ann Arbor; Lloyd C. Miller, Ph.D., recently with the University of Rochester, N. Y.; J. M. Curtis, Ph.D., National Research Fellow in Anatomy at Yale University, New Haven, during the past year; Herbert O. Calvery, Ph.D., assistant professor of physiologic chemistry, University of Michigan, Ann Arbor, and Edwin P. Laug, Ph.D., University of Pennsylvania. It will be the duty of this division to develop methods for identification and evaluation of new types of medicinal preparations, such as glandular extracts; to study effects of substances known to occur as impurities, such as arsenic and lead; to study toxicity of insecticides used as sprays on fruits and vegetables, and to learn the effects of new synthetic products, according to a statement made by Walter G. Campbell, chief of the Food and Drug Administration.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 20, 1935.

Résumé of the Public Health

In the house of commons Sir Kingsley Wood, minister of health, surveyed the progress of public health in the last twenty-five years. He said that never during a single generation had there been such advances in the preservation of life and the improvement of health of our people. Above all there had been a great widening of the national conscience on the matter of health. The nation was learning in many ways the supreme art of right living, was showing greater common sense in health, clothing and the dietary, and was making increasing use of daylight for leisure and recreation. Life was becoming longer and better. In 1910 the death rate at all ages was 13.5 per thousand persons, and 95,000 infants under the age of 1 year died. Last year the death rate had fallen to 11.8 and the deaths of infants to 35,000, yielding the lowest rate on record. Cancer accounted for 60,000 deaths last year, but he had hopes from research and the increasing use of radium.

National health insurance had developed during the last quarter of a century. Since 1911, $2,400,000,000 had been disbursed in benefits and in the last ten years $750,000,000. That scheme had been adopted by twelve other nations, from Norway to Japan. Widows and old age pensions had steadily expanded and now included 600,000 pensioners between the ages of 65 and 70, 600,000 widows' pensions supplemented by 270,000 allowances in respect of children, and 15,000 orphans' pensions.

Unreduced maternal mortality was a great blot on the health record. It was a complex problem requiring patience, constant research and active endeavor. A committee that inquired into 6,000 maternal deaths reported that 3,000 might have been prevented. In the past three years there had been an increase in the visits paid by health visitors to 60,000 expectant mothers; 240 more antepartum clinics had been provided, and the number of women attending had increased by 49,000. The number of women admitted into maternity beds provided by the local authorities or subsidized by them had increased by 29,000. He had great hopes in the special inquiries into maternal mortality that were being made by his officers with the assistance of a distinguished specialist.

Slum clearance and better housing was one of the greatest contributions of this generation to making a healthier nation. Since the war no nation had done so much; 2,670,000 new houses had been provided of a standard greatly improved in comparison with a quarter of a century ago.

International Congress on Life Assurance Medicine

The first International Congress on Life Assurance Medicine will be held in London from July 23 to July 26. The president is Sir Walter Langdon Brown and the honorary secretary Dr. Otto May. The congress is concerned with the application of the results of modern medical research to the special problems of the selection of individuals for life assurance. One session will be devoted to the subject of health service and life assurance, and an exhibition in connection with it is being arranged by Dr. Otto Neustatter of Berlin. July 23 a government reception will be held, when the minister of health will receive the guests.

The Employment of Married Physicians

The employment of married women is a vexed question. Some hold that married women should not by their competition be allowed to exclude from public appointments women who have to depend on their own exertions. On the other hand, those who believe in sexual equality hold that marriage should not be a bar to employment for women any more than for men.

This point is strongly insisted on by women's organizations. Some time ago the London County Council decided not to employ married women and to make marriage of its women employees a bar to further employment. The capture of the council by the labor party has produced a change. Various women's organizations sent deputations or made representations, all urging that married women be eligible for employment without restriction throughout the council's service. The general purposes committee of the council has made a report stating that the complexity of the question is such that any decisions must be in the nature of a compromise. The admission of married women must exclude from employment persons dependent on their own earnings in favor of an equal number for the most part not dependent. On the other hand, there are occupations in which marriage enhances the value of an officer. Considering the question from the point of view of the public service and not in the interest of any category, the committee has come to the conclusion that in two instances—the medical and teaching professions—material advantage to the public service would result if married women were eligible. "Not only do the duties of both doctor and teacher call for certain personal qualities which may be thought to be enriched by marriage, but the training of those entering these professions involves in many cases considerable expenditure of public money, the fruits of which are lost to the community if the career of every woman is terminated by marriage. We propose therefore, subject to certain limitations, that restrictions which at present debar married women in these professions from entering or remaining in the council's service shall be withdrawn." The limitations refer to practical difficulties. With regard to resident appointments, their holders must be available for duty when required at any hour of the day or night. Such demands are incompatible with the normal domestic and family responsibilities of a married woman. The committee therefore proposes that, excepting part-time consultants and specialists, all members of a hospital medical staff, including medical officers in the mental hospital service, and all teachers in residential appointments other than resident assistant mistresses in special service institutions, should be excluded from the scope of the proposals. But, in the case of the last-named exceptions, difficulties will not arise if it is made clear to the staff concerned that marriage will involve their transfer to nonresident appointments. The council adopted the report by 76 to 37 votes.

Regulation of Automobile Lighting

New regulations designed to afford greater safety on the roads at night have been prepared by the minister of transport. They deal with dazzling headlights, variation in the height of lights and the practice of leaving stationary vehicles with head-lamps on. The new regulations provide that the beam from any electric lamp exceeding 6 watts in power, fitted to an automobile, shall either be permanently deflected or susceptible of deflection to such an extent that it is incapable of dazzling any person standing on the same horizontal plane as the vehicle at a greater distance than 25 feet from the lamp and whose eye level is not less than 3 feet 6 inches above that plane. The practice of leaving vehicles stationary with their head-lamps on also causes unnecessary danger and inconvenience on the road. The regulations prohibit the use of electric lamps exceeding 6 watts (a reasonable and normal power for side lamps) while the vehicle is stationary on a road. Another matter about which complaints have been made is the height at which front and rear lamps on some types of vehicles are carried. The new regulations provide that the front lights on a vehicle shall not be higher than 5 feet from the ground and that if the rear red light is at a height exceeding 3 feet 6 inches a red reflector and white patch, similar to those used on pedal cycles, shall be carried at or below that height.

PARIS

(From Our Regular Correspondent)

July 5, 1935.

Too Much Reliance on Laboratory Results

Several years ago, one of the heads of a large American clinic cited an instance of one of the younger clinicians asking for the roentgen examination of the teeth of a patient, without taking the trouble to examine the mouth and verify the fact that the patient had only false teeth. This example was quoted to demonstrate that one is apt to neglect physical examinations in favor of laboratory reports. An article by Charles Fiessinger along the same lines appeared in the June 8 issue of the *Journal des praticiens.* Faure, Sergent and Vires have recently directed attention to the fact that clinical diagnosis must be aided by laboratory results but that the latter ought not to replace the former. Some of the examples cited by Fiessinger may appear exaggerated, but there seems to be much truth in them. The presence of albumin in the urine is of much importance only when accompanied by other symptoms, such as hypertension or signs of renal insufficiency such as headache, or of cardiac decompensation such as dyspnea on exertion. Often the albuminuria may be due to disturbances of nutrition in the form of digestive disturbances. As to glycosuria, small quantities of sugar in the urine most commonly are of little significance. A restriction of carbohydrates will correct the condition in the majority of cases. In children, especially, small amounts of sugar in the urine do not justify a diagnosis of diabetes. The urea content of the blood is of value only if it remains high in successive analyses. Numerous persons are seen with a blood urea of from 60 to 100 mg. per hundred cubic centimeters. If these are treated as nephritic, the urea will return to normal in a month and they will never later show a higher figure. Slight disturbance in liver action is often responsible for this transitory increase in blood urea, according to Noel Fiessinger. In such cases the treatment should be aimed at correction of the liver instead of at the renal disturbance. Acid-fast bacilli, which are thought to be tubercle bacilli, can be found on slides inadequately cleaned or even in ordinary tap water or the rubber tubing used in laboratories. The presence of tubercle bacilli in the sputum does not always signify an active pulmonary lesion. They are found in certain cases of bronchitis and pleurisy in which roentgenography fails to reveal any lesions. André Meyer has recently shown in a study of thirty cases of occult tuberculosis (pulmonary) that recovery occurs rapidly in the majority.

As to hypertension, this is not a menace unless it rises to 280 or 300 mm. of mercury. Hypertension is a serious condition only because of the underlying renal lesions that so frequently accompany it. Hypertension without such renal changes may exist for many years without resulting in the slightest accident. One often finds marked hypertension in very old persons. An increased diastolic pressure is of far more significance than an increased systolic rise. One must always bear in mind that the former condition may be transitory because of vascular spasm of nervous origin and is frequently observed in men active in business, lasting only a few weeks, and receding after an enforced absence from the strains of daily responsibilities. In women, especially during the menopause, one is apt to find high blood pressure, which responds well to regulation of diet and rest. Diet, according to Fiessinger, is one of the best therapeutic aids, especially in obese individuals and in cases of hypertension. Hypertension is a perfect phobia in many individuals. It is only a defensive reaction against interference with peripheral circulation, whether the latter is due to vascular spasm, to arteritis or to a renal lesion. The most important effect of high blood pressure is the extra work it places on the heart; hence, as soon as such a patient presents evidence of tachycardia, digitalin in small doses should be

given for four days and continued if the tachycardia persists. If this is done, the "gallop rhythm" does not appear for a long time, perhaps never. Fiessinger cites some cases in which erroneous interpretation of roentgenograms has led to unnecessary operations. In one case a spasmodic contraction of the colon was interpreted as a neoplasm. The same is true of gastric radiography, so that in doubtful cases he puts the patient to bed for one to two weeks, lessens the intake of food, and gives atropine to exclude pyloric spasm and dextrose solution rectally to combat dehydration. If the defect persists, operation is indicated. Fiessinger in closing pleads for good clinical observation as a supplement to laboratory results. In the majority of cases a delay of two or three weeks will not jeopardize the patient's life. Laboratory studies may then be repeated and may give a different result. Most patients are in a hurry to have an exact diagnosis made, but, when the advantages of further observation are explained, few will object to waiting until possible sources of error in diagnosis are eliminated. Fiessinger's reputation as a clinician merits attention being given to his warning to correlate clinical and laboratory observations.

Vaccination Against Typhus with a Living Virus

At the April 2 meeting of the Academy of Medicine, the report of the Pasteur Institute of Morocco's experience with antityphus vaccination during the past two years was submitted by Blanc and Gaud. They vaccinated 2,180 natives with the virus of the murine type of typhus isolated from rats of Casablanca (Morocco). The virus was employed in a 1:500 or 1:1,000 dilution to which 5 per cent by volume of sterilized oxbile was added. No vaccinal reaction was ever observed. Of the 2,180 natives, there were 1,149 men, 584 women and 447 children. The immunity enjoyed by one series of vaccinated, as well as the cessation of epidemics in two other localities, has led Blanc and Gaud to the belief that the use of a living virus mixed with bile will be successful in the future. It should be given as a prophylactic measure supplementary to delousing in every native community in which typhus is raging.

Evaluation of Previous Studies of Tubercle Bacillemia

An article from the Pasteur Institute of Paris has appeared on the frequency of finding tubercle bacilli in the blood of individuals suffering from a number of diseases usually considered as of nontuberculous origin. This article, by the late Professor Calmette and Dr. A. Saenz, one of his associates, is published in the fourth volume of the *Quarterly Bulletin* of the Committee on Hygiene of the League of Nations. The conclusions are the following: The Loewenstein medium is superior to all others for cultures of the human, bovine and avian types of tubercle bacilli. Only twelve positive results, i. e., 1.2 per cent, were obtained with this medium out of 936 blood examinations, a total of more than 6,000 tubes.

These blood cultures were made from patients suffering from acute and chronic tuberculosis, rheumatism and dementia praecox. The cases of tuberculosis yielded only 1.58 per cent positive results and the appearance of the cultures showed that only a small number of tubercle bacilli were present, the majority being of the human type. Blood cultures from thirty-seven cases of acute or chronic rheumatism were all negative. The same was true of eighty-three cultures made from the blood and of sixty from the spinal fluid of patients suffering from dementia praecox. This marked difference from the relatively large percentage of positive results from blood cultures of the same diseases, as obtained by Loewenstein, cannot be ascribed to any errors of technic or sensibility of culture medium or to any lack of collaboration between the clinicians and the laboratory workers. The luxuriant aspect of the cultures obtained in Loewenstein's laboratory as well as the positive results obtained in stains of the blood used for inoculation from dementia praecox, erythema nodosum and polyarthritis have never been found either at the Pasteur Institute or at other laboratories, despite the efforts of a large number of well qualified investigators. Although the Loewenstein medium is superior to all others for the cultivation of tubercle bacilli, it is far less reliable for hemocultures of the tubercle bacillus than the guinea-pig, as brought out in a recent report (*Compt. rend. Soc. de biol.* **118**:1159, 1935) by Saenz, Costil and Sadettin. Calmette and Saenz believe that the Loewenstein technic affects the vitality of the tubercle bacilli.

First Lecture at Hôpital de la Pitié by Professor Clerc

Prof. A. Clerc, cardiologist, has begun a series of clinical lectures at the Hôpital de la Pitié, to which hospital he was transferred after many years of service at the Lariboisière Hospital.

BERLIN

(From Our Regular Correspondent)

June 17, 1935.

Annual Session of the German Surgical Society

In April, the Deutsche Gesellschaft für Chirurgie held its annual session in Berlin. The attendance was 1,000. The main topic, "Cancer," was opened by F. König of Würzburg, who discussed the question as to whether surgery can still regard carcinoma as a local disorder, his conclusions being for the negative. Observations extending over many years have shown that, in addition to the cell degeneration that occurs in the primary focus, another, general factor facilitates the genesis of cancer. Evidence for this conception is the fact that frequently cancers that are histologically different from one another occur in the same person. The healing of cancer disease cannot be solved locally by a certain operation but is to a great extent subject to the influence of the general factors. The importance of the latter is shown by the fact that even with an evidently incomplete operation a recurrence is sometimes delayed for many years. Recurrences following sarcoma have often a different histologic character from the original tumor. On the other hand, without an operation no cure is possible. Whether or not the effects of the operation will be enduring will depend on the general factors; for example, on the predisposition to cancer. This condition is not yet fully understood, but it can apparently be influenced. Probably postoperative irradiation produces a modification of predisposition and thus constitutes a valuable addition to the operation. Klein of Ludwigshaven believes he has isolated a cell-bound but labile agent with which, with a high degree of certainty, malignant tumors can be produced in animals. Substances that have been regarded in the past as productive of cancer, such as aniline and tar, are doubtless factors that break down the defense. Measurement of the defense forces in man is possible through a modification of the Freund method, with the use of which Klein states that he secured usable results in 90 per cent of the cases. This makes possible an early diagnosis of tumors; persons menaced might be detected, and, finally, the relative danger of a recurrence after an operation might be estimated. The substance that exerts a lytic action on the cancer cell is located in the reticuloendothelial system, probably in the lymphocytes. Familial predisposition to cancer is based probably on a loss of defense forces, of hereditary origin.

Hellner of Münster emphasized that the osteogenic sarcoma must be distinguished clinically, histologically and roentgenologically from the Ewing sarcoma, which constitutes 6 per cent of all bone sarcomas. Permanent cures as a result of roentgen irradiation have not been observed. Most, of Breslau, brought out that metastasis of mammary cancer to the supraclavicular glands occurs in three different ways; hence evacuation of these

glands as a fixed principle should be demanded. In scrutinizing the material of the Bier Clinic, Hintze of Berlin found cancer to be the second most common cause of intestinal occlusion. Only about half of such cases are amenable to a radical operation. Likewise lymphosarcomas may, by compression of the intestine or by causing intestinal invagination, give rise to intestinal occlusion. Schönbauer of Vienna emphasized that the indications for the irradiation of malignant tumors have narrow limits. For carcinoma of the tongue, the buccal mucosa and the tonsils, the best treatment is combined radium and roentgen irradiation following electrocoagulation of the tumor. Tumors of the larynx and the thyroid react well to rays; cancer of the penis to radium; likewise cancer of the portio vaginalis. Tumors of the extremities should, under all circumstances, be treated surgically. Ray treatment is not favorable in cancer of the esophagus and in tumors of the gastro-intestinal canal, with the exception of cancer of the anus. Schönbauer saw no good effects of irradiations in brain tumors.

During the discussion, Kirschner of Heidelberg took a critical stand toward the cancer reactions of Klein. In a series of 600 cases he obtained correct results in 82 per cent. Since the reaction is disturbed by fever, cachexia, roentgen irradiation and drugs, about 30 per cent of the patients have to be eliminated. Nevertheless, Kirschner regards the method in combination with other methods as valuable. According to other speakers, the method is not yet sufficiently developed for general use. Nevertheless, Hummel, of the Sauerbruch Clinic in Berlin, has reported satisfactory results.

The next main topic was "Sterilization." According to an inquiry instituted by K. H. Bauer of Breslau, the number of sterilizations carried out thus far (in the two sexes) was 45,000. A grave mental defect supplied the indications in more than 96 per cent of the cases. The percentage of hereditary bodily malformations, on the other hand, was small. In his collected statistics on some 6,000 cases only 0.19 per cent belonged to that category. Half of the sterilized men were from 20 to 35 years old. Even though the judge of the eugenics court decides in favor of sterilization and orders it carried out, the operator must take account of any contraindications, such as general disorders and already existing sterility. In man, the operation may be indicated up to age 70. Concerning the technic there is considerable uniformity; the operation is usually carried out under local anesthesia. The number of modifications, however, is manifold. Bauer recommends bilateral ligation and resection of two prepubic segments of the vas deferens. He rejects the scrotal operation. Complications of a psychic or reflexive nature were not observed after the operation; hematoma, however, was noted in 1 per cent and infection in 0.7 per cent. In a series of 6,052 cases there were seven deaths (1.15 per thousand). The causes of death were pneumonia 2, cardiac weakness 1, myocarditis 1, epilepsy 1, erysipelas 1. In 8.5 per cent of the cases of the series the reason for the sterilization was unknown to the operator. The diagnosis should, however, be given to the physician, even though the judge bears the responsibility for the indications.

Von Mikulicz-Radecki of Königsberg spoke on the "Sterilization of Women." The proportion of women already sterile is between 2 and 3 per cent. As a rule, the abdominal operation should be applied to children, and the vaginal operation to women who are already mothers. The supravaginal resection or total extirpation of the uterus is prohibited. The best procedure is excision of the intramural portion of the tube. In the whole series the average mortality was 0.4 per cent (circulatory weakness, pneumonia). The average duration of the hospital stay was sixteen days.

An animated discussion followed. Von Brandis reported his observations on 214 operations in the Freiburg clinic. Only in 15 per cent were motile spermatozoa demonstrable a week after the operation.

Bätzner of Berlin reported his experiences with a new anesthetic, divinyl ether, which is highly volatile and acts promptly; forty seconds after the anesthesia is started the operation may be begun, and the patient awakens almost immediately after the last drops are administered. The anesthesia can be readily controlled. On the other hand, a definite dosage (from 60 to 100 Gm.) cannot be exceeded without danger, and the anesthesia cannot be extended beyond half an hour. Killian of Freiburg called attention to fatalities occurring in America.

The second day's session was devoted to thrombosis and embolism, the opening paper being presented by Stich of Göttingen. Postoperative embolism is never induced by one cause alone but always is due to several preconditions, which are associated with changes in the blood, the circulation or the vascular walls. The site of the thromboses that lead to an embolism is usually the femoral vein, at the point where it unites with the saphenous vein. The saphenous vein itself has little importance for the origin of an embolism. The deep veins of the calf and particularly those of the pelvis are more likely to be involved. The age of the patient plays a part, for often the necessary muscular play and secure closure of valves are lacking, which taken together may occasion a retardation of the circulation. If, in addition, there is a circulatory weakness, the preconditions for the development of a thrombus are soon present. The formation of a thrombus is facilitated by the fact that, as a person advances in age, the velocity of the circulation naturally decreases. Postoperatively one observes a changed composition of the blood. More particularly, from the fourth day on there is a shifting toward each other of the albumin and the globulin components. In young persons, however, all these changes do not suffice to produce a thrombosis, nor is a damage to the intima alone sufficient for the formation of a thrombus. It is primarily the inflammatory changes of the vascular walls that must be considered. Also electric storms and violent winds cause an increase of emboli, doubtless owing to their influence on the vegetative nervous system; the details of the mechanism are, however, not known. Statistics over long periods reveal that the proportion of fatal embolisms has remained about the same (from 0.2 to 0.3 per cent). The danger of embolism is almost nil in operations on the upper extremities, the neck and the thyroid. Exploratory laparotomy is more likely to produce embolism than are appendicectomy and gastric resection (because one is dealing for the most part with inoperable carcinomas in elderly persons with existing acidosis). It is not the abdominal incision as such that constitutes the menace of embolism but the fundamental disorder. The highest percentages are found in prostatectomy and in operations on rectal carcinoma. It is important to prevent as far as possible the development of decomposition products by conservative destruction of the tissues during an operation. In Stich's comprehensive statistics 83 per cent of all embolisms were in patients more than 40 years old, two thirds in patients more than 50 years old, and 20 per cent in persons more than 70. Age plays a part, owing to dehydration of the tissues; also through increase of the blood pressure and impairment of the circulation. Obese persons, owing to the commonly existing circulatory disturbance, are particularly menaced. Preventive measures include reduction of operative injuries to a minimum, limiting as far as possible the thirst and hunger period, ample introduction of fluids before and after the operation, getting up early or at least early exercise in bed in the form of movements of the legs or frequent changing of position, and frequent examination and strengthening of the circulation (strophanthin is more effective than digitalis, especially if combined with dextrose). The combating of postoperative acidosis is important. Therapy is almost powerless in dealing with embolism; operative treatment is but rarely indicated. If the attack is not fatal, active circulatory therapy is indicated; also sufficient quantities of narcotics to allay fear. Oxygen administration is absolutely necessary.

Payr of Leipzig pointed out that in inflammatory thromboses irradiation will cause swelling and pain quickly to recede; he recommends irradiation also in traumatic thromboses. Through the injection of from 20 to 40 cc. of the patient's own blood when the patient was more than 20 years old, Specht of Frankfort-on-Oder reduced the cases of embolism to one in 5,000 patients, as compared with from 0.6 to 0.9 per cent in previous series of patients. The Göttingen physiologist Rein stressed emphatically that the acceleration of coagulation had nothing to do with thrombosis.

Rehn of Freiburg called attention in his paper on "The Menace of Operations" to the fact that all injuries resulting from operations or anesthesia are primarily circulatory injuries, which are not easily influenced by ordinary remedies. However, by means of a thyrotropic hormone an improvement may be secured; it brings about an increase in the total amount of blood in circulation and an augmentation of the basal metabolism. The danger lies in a simultaneous impoverishment of the liver glycogen, to combat which vitamin A should be administered.

The opening paper on the next main topic, "Hemophilia," was presented by Schloessmann of Bochum, who emphasized the hereditary factors. He stated that hemophilia is not observed in the colored races but reappears in half-breeds. Since the disorder is hereditary and is firmly rooted in all the body cells, a cure is impossible. However, a symptomatic improvement can sometimes be secured through the administration, for example, of vitamin C preparations.

The opening paper on the next main topic, "Brain Surgery," was presented by Sauerbruch. He opposed an exaggerated specialization in this field. The surgery of brain tumors, however, should be reserved to specialists. The chief dangers in brain operations lie in postoperative increased pressure and in postoperative hemorrhage. Sauerbruch operates with the patient in a sitting posture, in order to reduce as much as possible the flow of blood to the brain. By the inspiration of rarefied air a large quantity of blood is transferred to the lungs. Electrocoagulation signifies a distinct advance for brain surgery. The results as a whole, in spite of the great progress made by Cushing, are disheartening. It appears doubtful whether the surgeon will ever be able to dispense with the collaboration of the neurologist.

The opening paper on the final main topic, "Surgery of the Prostate," was presented by Voelcker of Halle. He prefers the perineal route. The mortality ranges between 7 and 15 per cent. Emboli are the most frequent cause of death. The functional tests are important. High blood pressure demands caution but is not a contraindication. Cancer of the prostate is difficult to diagnose, and a radical operation is not easily effected. Resection with the aid of the cystoscope constitutes a distinct advance in hypertrophy of the prostate.

Professor Lexer of Munich was chosen president of the society.

Marriages

VICTOR EUGENE FRAZIER, Hot Springs National Park, Ark., to Miss Annie Lee Daniel of Independence, Mo., June 18.

SIGURD B. GUNDERSEN, La Crosse, Wis., to Miss Eleanor Head of Madison, at Stamford, Conn., recently.

JOHN KEMP DAVIS, San Francisco, to Miss Edith Elizabeth Nash of Landrum, S. C., in Atlanta, June 16.

THOMAS W. MATTINGLY to Miss Frances Elizabeth Wannamaker, both of Washington, D. C., June 3.

JAMES ROBERT JACKSON, Belzoni, Miss., to Miss Anne Bagwell at Murfreesboro, Tenn., June 19.

DE WITT DOMINICK, Philadelphia, to Miss Elizabeth Lakin Pullman of Bridgeport, Conn., July 13.

WARREN MONROE GILBERT, Boulder, Colo., to Miss Mary Cuttino Harbin of Rome, Ga., May 21.

Deaths

George Milton Linthicum ⊕ Baltimore; College of Physicians and Surgeons, Baltimore, 1893; member of the House of Delegates of the American Medical Association at a special session in February, 1935; since 1913 professor of diseases of the rectum and colon, University of Maryland School of Medicine; formerly professor of physiology and proctology, Baltimore Medical College; past president and vice president of the Medical and Chirurgical Faculty of Maryland; member and formerly vice president of the American Proctologic Society; fellow of the American College of Surgeons; served during the World War; consultant to the city health department; proctologist to the University of Maryland, Maryland General, Baltimore City and West Baltimore General hospitals; consultant to the Hospital for Consumptives, Towson, and Veterans' Administration, Perry Point; proctologist to the U. S. Marine Hospital for fourteen years; consultant in proctology and a member of the board of trustees of the E. C. Hazard Hospital, Long Branch, N. J.; medical examiner for the Fidelity Life Insurance Company of America; aged 64; died, July 18, at his home in Roland Park, Maryland, of cerebral hemorrhage.

Louis Francis Jermain ⊕ Milwaukee; Northwestern University Medical School, Chicago, 1894; dean from 1913 to 1926, at which time he was elected dean emeritus, and clinical professor of medicine, Marquette University School of Medicine; past president of the State Medical Society of Wisconsin, Milwaukee County Medical Society and the Milwaukee Academy of Medicine; fellow of the American College of Physicians; in 1927 was decorated Knight of St. Gregory by the Pope; aged 67; on the staffs of the Milwaukee County Hospital and St. Joseph's Hospital, where he died, July 24, of diverticula of the colon, cirrhosis of the liver and coronary sclerosis.

Jesse Worthy Lea ⊕ Jackson, La.; Tulane University of Louisiana Medical Department, New Orleans, 1891; fellow of the American College of Physicians; formerly president of the East and West Feliciana Parish Medical Society; past president and councilor of the Sixth District Medical Society; served during the World War; for eight years on the staff of the East Louisiana State Hospital, and at one time on the board of administrators; aged 66; was found dead, July 9, of coronary occlusion.

Daniel Hamer Calder, Los Angeles; University of Vermont College of Medicine, Burlington, 1895; member of the California Medical Association; formerly instructor and assistant professor in neurology and psychiatry, College of Physicians and Surgeons, medical department of the University of Southern California; for many years superintendent of the State Hospital, Provo, Utah; on the staff of the Los Angeles County Hospital; aged 62; died suddenly, July 19.

George D. Miller, Logansport, Ind.; Central College of Physicians and Surgeons, Indianapolis, 1901; member of the Indiana State Medical Association; formerly secretary of the Cass County Medical Society; past president and secretary of the board of health of Logansport; at one time county coroner and state senator; on the staff of the Cass County Hospital; aged 61; died, July 19, of a skull fracture received in an automobile accident.

James Starr Hewson, Millburn, N. J.; College of Physicians and Surgeons, Baltimore, 1909; member of the Medical Society of New Jersey; police surgeon and member of the board of health of Millburn; served during the World War; aged 68; on the staffs of the Presbyterian Hospital and the Newark (N. J.) Beth Israel Hospital, where he died, July 8, of duodenal ulcer and pulmonary embolism.

Lawrence Hendee ⊕ Buffalo; University of Buffalo School of Medicine, 1897; fellow of the American College of Surgeons; at one time assistant demonstrator of anatomy, Cornell University Medical College, Ithaca, N. Y.; on the staffs of the Millard Fillmore Hospital, Buffalo, and the J. N. Adam Memorial Hospital, Perrysburg; aged 58; died, June 27, of coronary occlusion and arteriosclerosis.

Edward Lewis Armbrecht, Wheeling, W. Va.; Jefferson Medical College of Philadelphia, 1892; member of the West Virginia State Medical Association; city councilman; for many years president and member of the board of education; on the staffs of the Ohio Valley General Hospital and the Wheeling Hospital; aged 65; died, July 10, of coronary thrombosis.

Mariano Tolentino y Guerrero ⊕ Manila, P. I.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1910; formerly associate professor

of gynecology, University of the Philippines College of Medicine; on the staff of the Philippine General Hospital; aged 47; died recently, of cerebral hemorrhage.

Robert Bronson Hartsfield, Johnson City, N. Y.; Syracuse (N. Y.) University College of Medicine, 1928; formerly assistant professor of pathology at his alma mater; member of the Medical Society of the State of New York; aged 36; was drowned, July 8, when his automobile plunged into a canal.

Orville Lee Baldwin ⊕ Columbus, Ohio; Rush Medical College, Chicago, 1922; member of the American Academy of Pediatrics; on the staffs of the Grant, White Cross, St. Ann's and Children's hospitals; aged 41; died, June 9, of coronary thrombosis, while attending a meeting in New York.

Elwood Palmer Spencer, Cooperstown, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1903; member of the Medical Society of the State of Pennsylvania; aged 68; on the staff of the Franklin (Pa.) Hospital, where he died, July 2, following an operation for appendicitis.

Harry Wilson Stout ⊕ Wenonah, N. J.; University of Pennsylvania School of Medicine, Philadelphia, 1917; past president of the Gloucester County Medical Society; aged 44; on the staff of the Underwood Hospital, Woodbury, where he died, June 29, of acute dilatation of the heart.

Robert Elwood Heimbach ⊕ Castle Point, N. Y.; Cornell University Medical College, New York, 1923; member of the Medical Society of the State of Pennsylvania; served during the World War; aged 40; died, May 25, in the Veterans' Administration Facility, of pulmonary tuberculosis.

Manyard H. Davis ⊕ Mays Lick, Ky.; University of Louisville Medical Department, 1881; in 1929 member of the House of Delegates of the American Medical Association; aged 75; died, June 14, in the Christ Hospital, Cincinnati, of hypertrophy of the prostate and pulmonary embolism.

Joseph Wellington Schoffstall ⊕ Sunbury, Pa.; Jefferson Medical College of Philadelphia, 1902; served during the World War; on the staff of the Mary M. Packer Hospital; aged 55; died, June 23, in the George F. Geisinger Memorial Hospital, Danville, of cerebral thrombosis.

John Norfolk Morris, Sykesville, Md.; University of Maryland School of Medicine, Baltimore, 1893; member of the Medical and Chirurgical Faculty of Maryland; on the staff of the Springfield State Hospital; aged 62; died, June 22, of peptic ulcer.

John Edgar Getman ⊕ New York; Columbia University College of Physicians and Surgeons, New York, 1899; served during the World War; on the staffs of St. Luke's and Post-Graduate hospitals; aged 58; died, June 12, of heart disease, at Brewster, N. Y.

Luther Herbert Thomas, Branchville, S. C.; Medical College of the State of South Carolina, Charleston, 1910; formerly mayor; member of the South Carolina Medical Association; member of the board of health; aged 50; died, June 20, of heart disease.

William P. Love, Youngstown, Ohio; Western Reserve University Medical Department, Cleveland, 1896; member of the Ohio State Medical Association; veteran of the Spanish-American and World wars; aged 64; died, July 11, of cerebral hemorrhage.

Frederick Van Vliet, New York; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1895; aged 63; died, July 8, in the Kings County Hospital, Brooklyn, of meningococcic meningitis and cerebral thrombosis.

Christus A. Derebey, Chicago; Northwestern University Medical School, Chicago, 1897; member of the Illinois State Medical Society; aged 78; on the staff of the Belmont Hospital, where he died, June 25, of chronic endocarditis and arteriosclerosis.

Emil Joseph Susslin ⊕ Bridgeport, Conn.; University of Vermont College of Medicine, Burlington, 1921; aged 37; on the staffs of the Englewood Hospital and the Bridgeport Hospital, where he died, July 9, of subacute bacterial endocarditis.

Park Alfonso Findley ⊕ Des Moines, Iowa; Drake University Medical Department, Des Moines, 1895; formerly sheriff of Polk County and chief of the Iowa State Bureau of Criminal Investigation; aged 60; died suddenly, June 13, of heart disease.

Edwin Harwood Smith ⊕ Bemidji, Minn.; University of Minnesota College of Homeopathic Medicine and Surgery, Minneapolis, 1900; city health officer; on the staff of the Lutheran Hospital; aged 59; died, July 7, of lobar pneumonia.

George Guy Snyder, Harrisburg, Pa.; Medico-Chirurgical College of Philadelphia, 1899; member of the Medical Society of the State of Pennsylvania; since 1919 county prison physician; aged 59; died, July 13, of hypertension and uremia.

David Howard Cooper, Pittsburgh; University of Pittsburgh School of Medicine, 1923; on the staffs of the Homestead (Pa.) Hospital and the Montefiore Hospital; aged 37; died suddenly, June 12, of coronary occlusion.

Samuel Omer Barwick, Elkhart, Ind.; Eclectic Medical Institute, Cincinnati, 1894; member of the Indiana State Medical Association; aged 72; on the staff of the Elkhart General Hospital, where he died, July 7, of pneumonia.

Edwin Remick, Tamworth, N. H.; University of Vermont College of Medicine, Burlington, 1894; member of the New Hampshire Medical Society; aged 69; died, June 2, of chronic myocarditis and acute pulmonary edema.

Myra Brown-Tynan, Portland, Ore.; Willamette University Medical Department, Portland, 1889; for seventeen years connected with the city health department; aged 67; died, June 20, of cerebral hemorrhage.

Peter T. Barnum Shaffer, Elizabeth, Pa.; Western Reserve University Medical Department, Cleveland, 1877; member of the Medical Society of the State of Pennsylvania; aged 85; died, June 25, of carcinoma of the stomach.

James Thomas Flannigan, Sinclairville, N. Y.; University of Buffalo School of Medicine, 1928; aged 32; on the staff of the Jamestown (N. Y.) General Hospital, where he died, May 25, of encephalomyelitis.

Charles Wilber Seever, Sheldon, Ill.; Chicago College of Medicine and Surgery, 1909; served during the World War; aged 54; died, July 4, in the Garfield Park Hospital, Chicago, of cirrhosis of the liver.

Benjamin L. Clifton, Millen, Ga.; Southern Medical College, Atlanta, 1885; member of the Medical Association of Georgia; aged 77; died, June 7, of cerebral hemorrhage and acute nephritis.

Albert Lewis Martin, Wyandotte, Mich.; State University of Iowa College of Homeopathic Medicine, Iowa City, 1887; aged 68; died, July 20, at his home in Trenton, of cerebral hemorrhage.

William Altman ⊕ Cleveland; Ohio State University College of Homeopathic Medicine, Columbus, 1916; aged 47; died, July 16, of chronic myocarditis, heart disease and pulmonary edema.

Duffield Roy Kruger, Manila, P. I.; Kansas City (Mo.) College of Medicine and Surgery, 1916; aged 41; died suddenly, April 6, in St. Paul's Hospital, of pulmonary embolism.

Edward Bates Clements, Macon, Mo.; Howard University College of Medicine, Washington, D. C., 1881; aged 74; died, June 19, of injuries received in an automobile accident.

Alton R. Danforth, Norcross, Ga.; Southern Medical College, Atlanta, 1890; aged 76; died, June 5, in a hospital at Atlanta, of chronic nephritis and cirrhosis of the liver.

Earle Rice Davis, Renovo, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1917; served during the World War; aged 40; died, June 15, of heart disease.

John Thomas Edwards, Glencoe, Ala.; University of Tennessee Medical Department, Nashville, 1890; aged 78; died, May 26, of hypostatic pneumonia and arteriosclerosis.

Edward James McConaghy, Audubon, N. J.; Jefferson Medical College of Philadelphia, 1911; aged 52; died, June 18, in the Lakeland Sanatorium, Grenloch, of pneumonia.

John Daniel Grant ⊕ Allock, Ky.; University of Louisville Medical Department, 1917; past president of the Perry County Medical Society; aged 45; died, June 2.

Charlie Bib Townes ⊕ Tahoka, Texas; Vanderbilt University School of Medicine, Nashville, Tenn., 1908; aged 58; was killed, July 10, in an automobile accident.

William Hastings Dial, Laurens, S. C.; University of Maryland School of Medicine, Baltimore, 1884; formerly mayor; aged 75; died, June 1.

Archie Royal Fleming, Suffolk, Va.; Howard University College of Medicine, Washington, D. C., 1919; aged 43; died, April 10, of angina pectoris.

Albert Emmons Connell, Cleveland; Western Reserve University Medical Department, Cleveland, 1904; aged 62; died, June 12, of myocarditis.

Robert Benjamin Killian, Lincolnton, N. C.; Louisville (Ky.) Medical College, 1885; aged 79; died, June 26, of carcinoma of the colon.

Bureau of Investigation

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE: The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the composition; (4) the type of nostrum; (5) the reason for the charge of misbranding and (6) the date of issuance of the Notice of Judgment—which may be considerably later than the date of the seizure of the product.]

Captain Bryant's Grand American Remedy.—E. W. Bryant, Scranton, Pa. Composition: Essentially volatile oils including those of peppermint and red peppermint, with alcohol, water and red coloring. For stomach disorders, diarrhea, toothache, diphtheria, etc. Fraudulent therapeutic claims.—[*N. J. 21983; September, 1934.*]

Curry's Headache Powders.—Curry Arrington Co., Rome, Ga. Composition: Essentially 2.4 grains of acetanilid, 0.94 grain of caffeine, and 1.5 grains of baking soda in each powder. Misbranded because amount of acetanilid per powder was not declared on the label, as required by law; misbranded, further, because of fraudulent therapeutic claims.—[*N. J. 21984; September, 1934.*]

Breeden's Blood Medicine.—Breeden Drug Co., Inc., Memphis. Composition: Essentially potassium iodide, extracts of plant drugs and alcohol (14.2 per cent by volume). Fraudulent therapeutic claims.—[*N. J. 21993; September, 1934.*]

Copinol.—Copinol Co., Los Angeles. Composition: Essentially mineral oil, with a trace of an alkaloid such as berberine, and perfume. For catarrh, hay fever, sinus trouble, etc. Fraudulent therapeutic claims.—[*N. J. 21994; September, 1934.*]

Hutchison's Antiseptic Healing Oil.—Hutchison Medicine Co., Texarkana, Texas. Composition: Essentially volatile oil such as sassafras and turpentine, with carbolic acid, a vegetable oil such as linseed, and mineral oil (about 75 per cent). For eczema, itch, piles, boils, etc. Fraudulent therapeutic claims.—[*N. J. 21995; September, 1934.*]

Kutnow's Anti-Asthmatic Powder.—Hutchison Medicine Co., Texarkana, Texas. Composition: Essentially saltpeter and plant material, such as stramonium or belladonna. Fraudulent therapeutic claims.—[*N. J. 21995; September, 1934.*]

Nash's Salve.—Hutchison Medicine Co., Texarkana, Texas. Composition: Essentially volatile oils including menthol, camphor, eucalyptus, sassafras and turpentine, in a mixture of glycerin and petrolatum. For coughs, catarrh, asthma, piles, boils, tonsillitis, etc. Fraudulent therapeutic claims.—[*N. J. 21995; September, 1934.*]

Bamacea Oil.—Bamacea Co., Boston. Composition: Essentially small amounts of volatile oils including wintergreen, spearmint and rosin, in mineral oil. Cure-all. Fraudulent therapeutic claims.—[*N. J. 21996; September, 1934.*]

Bamacea Salve.—Bamacea Co., Boston. Composition: Essentially a small amount of volatile oil such as spearmint, in a mixture of petrolatum and rosin. For boils, carbuncles, tonsillitis, pneumonia, appendicitis, peritonitis, etc. Fraudulent therapeutic claims.—[*N. J. 21996; September, 1934.*]

Gastramints.—Bamacea Co., Boston. Composition: Essentially starch, sugar and a small amount of a fatty acid such as stearic acid, in tablet form. For dyspepsia, gastritis, heartburn, nervous prostration, etc. Fraudulent therapeutic claims.—[*N. J. 21996; September, 1934.*]

Nanzetta's New Prescription.—Composition: Essentially plant drug extracts including cascara sagrada, licorice and sarsaparilla, with alcohol (81 per cent by volume) and water. For rheumatism, impure blood, liver and stomach disorders, etc. Misbranded because quantity or proportion of alcohol not declared on label and because of fraudulent therapeutic claims.—[*N. J. 21998; September, 1934.*]

Zepyrol.—Stearns-Hollinshead Co., Inc., Portland, Ore. Composition: Small amounts of zinc chloride, common salt, glycerin, saccharine, alcohol (2.5 per cent by volume) and water, colored and flavored. For skin diseases, tonsillitis, influenza, catarrh, etc. Not antiseptic or germicidal, as claimed. Fraudulent therapeutic claims.—[*N. J. 22002; September, 1934.*]

Beatsel Earache Outfit.—G. & W. Laboratories, Inc., Jersey City, N. J. Composition: Essentially ether, camphor, eucalyptol and alcohol. Fraudulent therapeutic claims.—[*N. J. 22003; September, 1934.*]

Oyster-X-Tonic.—Oyster-X Co., Cleveland. Composition: Tablets containing material derived from nux vomica, calcium, iron and aluminum compounds, traces of copper, iodine, manganese and phosphorus compounds, proteins and starch. For blood-building, etc. Misbranded because the ingredients named were present in insignificant amounts and because the statement "government-inspected" was false. Fraudulent therapeutic claims.—[*N. J. 22004; September, 1934.*]

Mother Gray's Sweet Powders for Children.—A. S. Olmsted Co., Le Roy, N. Y. Composition: Essentially sulphur, baking soda, licorice, starch and sugar. For stomach, liver and digestive disorders. Fraudulent therapeutic claims.—[*N. J. 22005; September, 1934.*]

Force.—Union Pharmacal Co., Kansas City, Mo. Composition: Essentially plant drug extracts including a laxative, with phenolphthalein, phosphoric acid, alcohol, sugar and water. For debility, anemia, physical and mental exhaustion, etc. Fraudulent therapeutic claims.—[*N. J. 22009; September, 1934.*]

Ner-Vita.—Anglo-American Pharmaceutical Corporation and Huxley Laboratory, Inc., New York. Composition: Essentially the glycerophosphates and formates of calcium, iron, manganese, sodium and potassium, with strychnine, glycerin, sugar and water. For weak nerves, anemia, debility, etc. Fraudulent therapeutic claims.—[*N. J. 22013; September, 1934.*]

X-Z-Mex.—Dr. Jayess Pharmacal Products, Allston Station, Boston. Composition: Essentially zinc oxide (5.3 per cent), salicylic acid (1.1 per cent), sodium salicylate (1.3 per cent), mercurous chloride (2.2 per cent), volatile oil such as cade oil (1 per cent) and water (4.7 per cent), incorporated in petrolatum. For eczema, psoriasis, ulcers, dandruff, etc. Fraudulent therapeutic claims.—[*N. J. 22012; September, 1934.*]

The $20,000 A Dose Discovery.—C. Neil Simpson, Houston, Texas. Composition: Essentially a mixture of zinc sulphate and powdered digitalis leaves. For blood disorders, syphilis and other venereal diseases, cancer, ulcerated stomach, piles, boils, pellagra, etc. Fraudulent therapeutic claims.—[*N. J. 22014; September, 1934.*]

Rainey's Vitality Tablets.—Dr. Rainey Drug Co., Chicago. Composition: Calcium carbonate, metallic iron, iron carbonate and plant drug extractives including cinchona and nux vomica. For anemia, indigestion, neurasthenia, etc. Fraudulent therapeutic claims.—[*N. J. 22180; September, 1934.*]

Rainey's Laxatives.—Dr. Rainey Drug Co., Chicago. Composition: Uncoated tablets containing calcium carbonate, plant drug extracts including nux vomica and a laxative, and a small amount of an iron compound. For liver disorders, stomach catarrh, etc. Fraudulent therapeutic claims.—[*N. J. 22180; September, 1934.*]

Histeen.—Histeen Corporation, Chicago. Composition: Essentially phenobarbital, antipyrine and a small amount of plant material. For asthma, hay fever and bronchitis. Misbranded because labeled "Non-habit forming"; also because of fraudulent therapeutic claims.—[*N. J. 22016; September, 1934.*] This nostrum was the subject of a detailed article that appeared in this department of THE JOURNAL, Oct. 14, 1933.

Colonaid.—Norwood Pharmaceutical Co., Inc., and Clyde F. Lloyd, Chicago. Composition: Essentially milk sugar, casein, dextrin and smaller amounts of starch, phenolphthalein, calcium phosphate, a potassium compound and carbonates. For stomach and bowel troubles, autointoxication, etc. Misbranded because called harmless, natural laxative food, which it was not; also because of fraudulent therapeutic claims.—[*N. J. 22019; September, 1934.*]

Anti-Cholelith.—Leon Chemical Co., Springfield, Mo. Composition: Essentially plant drug extracts including hydrastis and a small amount of acetic acid, with glycerin and water. For gallstones, kidney stones, autointoxication, indigestion, constipation, etc. Fraudulent therapeutic claims.—[*N. J. 22191; September, 1934.*]

Silver Salve Gall Remedy.—Diehl Chemical Co., Omaha. Composition: Zinc oxide (9 per cent) and a small amount of benzaldehyde in a mixture of petrolatum and fat, colored blue. For old sores, wounds, ringworm, protruding piles, varicose veins, eczema, etc. Fraudulent therapeutic claims.—[*N. J. 22193; September, 1934.*]

Ensign Remedies.—Ensign Co., Battle Creek, Mich. Composition: Remedy No. 42, 99.6 per cent of sugar; Remedy No. 7, 99.2 per cent of sugar; no therapeutic agents found. Fraudulent therapeutic claims for Remedy No. 42 as cure for primary syphilis, etc., and for Remedy No. 7 as a cure for la grippe, influenza, etc.—[*N. J. 22196; September, 1934.*]

Cascara Cold Breakers.—National Pharmacal Co., Detroit. Composition: Acetanilid (1.7 grains), small amounts of plant drug extracts including a laxative drug, ammonium chloride, camphor, red pepper and sodium salicylate, and a trace of a drug containing a mydriatic alkaloid. Adulterated because below professed standard of purity and strength; misbranded because quantity and proportion of acetanilid not declared on label and also because of fraudulent therapeutic claims.—[*N. J. 22195; September, 1934.*]

Petro-Ido.—White Specific Toilet Co., Nashville, Tenn. Composition: 0.05 per cent of iodine dissolved in mineral oil. For stomach ulcer, appendicitis, typhoid, stomach cancer, high blood pressure, heart trouble, etc. Fraudulent therapeutic claims.—[*N. J. 22198; September, 1934.*]

Santay-Swiss Anti-Diabetic Tea.—Modern Health Products, Inc., Milwaukee. Composition: Plant drugs including peppermint leaves and stems, malva flowers, senna pods and dog grass. Fraudulent therapeutic claims.—[*N. J. 22199; September, 1934.*]

Nutro-Links.—Modern Health Products, Inc., Milwaukee. Composition: Formulas No. 5 and No. 6, and No. 6 Tablets: Powdered plant material, common salt and Glauber's salt. For rheumatic conditions. Fraudulent therapeutic claims.—[*N. J. 22199; September, 1934.*]

Black's Brown Powder.—Dr. W. E. Black Co., Dallas, Texas. Composition: Essentially baking soda, magnesium carbonate and an iron compound. For acidosis, gastritis, ulceration, kidney disorders, etc. Fraudulent therapeutic claims.—[*N. J. 22302; November, 1934.*]

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

EARLY DIAGNOSIS OF TUBERCULOSIS

To the Editor:—I thoroughly enjoy reading Queries and Minor Notes. Of particular interest to me were the articles on tuberculin testing, appearing in the issues of May 26 and Sept. 22, 1934. Please allow me to discuss briefly one phase in the last part of your answer to Dr. Billard (Sept. 22, 1934, p. 935):

"In the finding of the first infection focus of tuberculosis, which practically always results in a positive tuberculin reaction, the x-ray film is of little avail. By it, 75 per cent or more of the lesions are missed, as demonstrated by Miller (*Am. J. Roentgenol.* **26:** 191 [Aug.] 1931) and others who have carefully studied x-ray films made ante mortem and compared the observations with what has been found post mortem."

I think that Dr. Miller's observations in the recognition of thoracic calcifications are accurate. However, in your answer an inference might be drawn that 75 per cent of serious lesions were missed by roentgen examination. This is probably not the way you meant it. However, I will discuss briefly the question of roentgen examination and tuberculin testing, from a practical point of view. Positive reactors denote live tubercle bacilli in the body; the x-ray film shows whether or not there are serious lesions in the lungs. It is well known that with a good roentgenogram, gross or serious lesions, which soon prove fatal to the patient, are seldom missed. Now, are small primary lesions and calcification and enlarged tracheobronchial lymph nodes serious? All admit that the latter types of patients and all positive reactors should have repeated roentgen examinations in order to pick up serious lesions if they develop.

During the past six years in the Los Angeles County Health Department, out of some 15,000 children who were positive reactors and who were negative for pulmonary tuberculosis by roentgen examination, only six in the calcified and enlarged lymph node group were found to have developed pulmonary tuberculosis (reinfection). Two of these active cases were in known contacts. The majority of positive reactors have been rechecked several times by x-rays and are consistently negative. All active cases are, of course, isolated from the rest of the family, whenever possible. However, this is many times impossible as a high percentage of our patients are Mexicans, whose home conditions are undesirable.

This is our plan, which I think is practical, for it is working:

All positive reactors are roentgenographed and the following essential points are taken into consideration:

1. Has the patient pulmonary tuberculosis? If so, will he infect others?
2. Is the patient suitable for sanatorium care?
3. Is the patient suitable for collapse therapy?
4. Has the patient demonstrable enlarged lymph nodes or calcified lesions? If so, are they considered serious?

(The following discussion is confined principally to point 4.)

We do not consider calcification and enlarged lymph nodes serious at the moment. These patients will not infect others and will not die from these types of lesions.

Is this type of patient suitable for preventorium or sanatorium care? Usually not. If all these patients were sent to sanatoriums there would not be sufficient accommodations. Furthermore, beds would be filled with clinically well patients. If the home conditions are good, even the patients who have small primary uncalcified lesions are seldom sent to sanatoriums, as the lesions usually disappear within six months.

The method we use, when we find a small lesion in the lung (in order to rule out bronchopneumonia), is to recheck roentgenographically within a month. If the lesion persists, we consider it tuberculous.

It is not my wish to enter into a controversy regarding endogenous and exogenous tuberculous infection, as I feel that this is a two-sided question, and the correct answer may not be forthcoming for several years. However, Professor Blacklock has shown by many autopsies that in no instance has there been a retrograde spread from the tracheobronchial lymph nodes back into the lung substance, and he concluded that the lymphogenous origin of the primary infection is unlikely (Tuberculous Disease in Children, Its Pathology and Bacteriology, Special Report Series, No. 172, Medical Research Council, Glasgow, Scotland).

I think that roentgen examination is of major importance in all suspected cases of tuberculosis, as serious lesions can be immediately ruled out. After all, this is of primary concern. We tuberculosis workers are inclined to be so scientific that we fog the issue. The novice doesn't know how to interpret our observations.

MERL LEE PINDELL, M.D., Los Angeles.
Roentgenologist for Los Angeles County Health Department.

ANSWER.—The statement that 75 per cent or more of lesions of the first infection type of tuberculosis are missed by roentgen examination was intended to emphasize the fact that the x-ray film is a gross method of locating lesions of this type but that the tuberculin test is a delicate method of finding such cases. Many workers have been of the opinion that if the roentgen examination does not reveal a lesion none exists and have expressed the belief that such persons are only infected and do not have disease. This statement by no means discredits the value of the x-ray film but only points out the helplessness that still exists in the attempt to locate the site of the lesion in large numbers of persons who have tuberculosis.

The question has been raised as to whether the first infection type of tuberculosis either in the inflammatory stage and sufficiently large as even to be mistaken for pneumonia by roentgen examination alone, or in the calcified stage, may ever be considered serious of itself. Apparently nearly all the serious lesions are produced by reinfections. The belief that reinfections are frequently from endogenous sources is gaining ground, as indicated by such workers as Miller (*Ann. Int. Med.* **8:**243 [Sept.] 1934). Therefore, one must look on every first infection type of lesion, whether or not it is demonstrated roentgenographically, as having serious potentialities through providing tubercle bacilli, which are transmitted elsewhere, where they often set up serious reinfection types of lesions. From such studies as those made by Chadwick (*School Physicians' Bull.*, October 1934), Myers and Harrington (THE JOURNAL, Nov. 17, 1934, p. 1530) and Stewart (THE JOURNAL, April 8, 1933, p. 1077) it appears clear that children with the first infection type of tuberculosis, which has caused them no illness, are many times more likely to develop serious lesions in later life than children who have not developed the first infection type of disease. Therefore, in roentgen examinations the chief concern should be not with finding the first infection type of lesion, since the positive tuberculin reaction has already shown that it exists, but rather with finding the reinfection type, to which the term "serious" is always justifiably applied, no matter how small the lesion may appear. This fact should justify the making of x-ray films periodically of every positive reactor.

The chronic reinfection type of pulmonary tuberculosis is not frequently seen until adolescence approaches. Therefore it has been suggested that periodic x-ray film work of positive reactors begin at about that age except among children with other manifestations of disease or when funds are not a problem.

The fact that six cases of the reinfection type of tuberculosis have already been found among 15,000 children under observation only six years is of considerable significance, since tuberculosis is a communicable disease. If the group of children at Los Angeles is similar to those observed elsewhere, this number will be markedly increased if they are kept under observation until even the age of 25 years is reached. It has been said that it seems remarkable that probably from thirty to forty million persons in the United States would react positively to the tuberculin test and that the number with clinical tuberculosis is relatively small. One must not neglect the fact that nearly all of the remaining eighty to ninety million persons in this country who probably would react negatively to the tuberculin test are free from clinical tuberculosis; that is, the thirty to forty million with positive reactions provide practically all the tuberculosis load of this country.

The plan of procedure described is excellent. Under point 1 the correspondent doubtless has in mind the reinfection type of pulmonary tuberculosis. The question as to whether such patients are suitable for sanatorium care or collapse therapy must always be determined for the individual case, depending on the extent of disease, whether it is unilateral or bilateral, whether it has broken down so that the patient is disseminating tubercle bacilli, whether the home conditions are such that one is justified in beginning collapse therapy, and whether the patient's temperament is one that will require much discipline. All these and many other points are doubtless taken into consideration in determining which form of treatment shall be employed; each is good in its place.

Under point 4 there is no doubt that those who have observed large numbers of children with the first infection type of disease over many years will agree that calcification and enlarged lymph nodes are not serious at the time. They will also agree that preventorium and sanatorium care usually are not indicated. The method of rechecking when a small lesion first makes its appearance in the lung is ideal, for certainly no one by an x-ray film or physical examination can differentiate between small lesions of pulmonary tuberculosis and bronchopneumonia.

As Professor Blacklock's studies were based entirely on postmortem examinations, it is obvious that he had the opportunity of making only the final examination. While it is true that this is the most accurate method of making an examination, it is also true that serial examinations of lesions by x-ray film and other methods over long periods of years is the only method by which one can trace the actual evolution of tuberculosis.

CONTAGIOUS ABORTION IN CATTLE

To the Editor:—Recently I have been asked a number of questions about contagious abortion in cattle that are too much for me. 1. Is it the same disease as Malta or relapsing fever? 2. Is it transmitted through cow's milk? 3. Is cooking in ordinary ways sufficient sterilization of the meat of an aborting cow? 4. Is there any danger in feeding milk of such cows to chickens or hogs? 5. Is the blood test as done by federal veterinary surgeons a reliable test? 6. Would a positive test on a cow that has never aborted and is symptom free be enough evidence to justify destruction of the cow? 7. Is a cow that is a reactor but has never aborted and is symptom free a menace to other cattle in the same herd? Will you please cite references to authorities, as this is quite an important question in the community just now.

E. R. HUCKLEBERRY, M.D., Garibaldi, Ore.

ANSWER.—1. Malta fever, now more commonly called undulant fever or brucellosis, and contagious abortion in cattle are caused by the same etiologic agent, Brucella. Relapsing fever is quite a different disease, caused by several varieties of spirochetes belonging to the genus Spironema.

2. Brucellosis in human beings is commonly transmitted through raw cow's milk or unpasteurized dairy products.

3. Yes.

4. There is danger in feeding the milk of cows with Brucella infection to hogs. Emmel and Huddleson have isolated Brucella from the domestic fowl in a naturally infected flock and have produced the disease in several breeds of fowl, usually with fatal termination, after feeding the fowl on mash containing Brucella.

5. Yes.

6. Such a cow should be isolated from noninfected animals or destroyed.

7. Yes.

Following are references:

King, M. J.: Brucella Abortus Infection of Milk, *New England J. Med.* **201:** 918 (Nov.) 1929.

Carpenter, C. M., and Baker, D. W.: A Study of Brucella Abortus Infection in Milk from Fifty Herds Supplying the City of Ithaca, N. Y., *Cornell Veterinarian* **17:** 276 (July) 1927.

Hardy, A. V.; Jordan, C. F.; Borts, I. H., and Hardy, G. C.: Undulant Fever, with Special Reference to a Study of Brucella Infection in Iowa, *Pub. Health Rep.* **45:** 2433 (Oct. 10), 2525 (Oct. 17) 1930.

Carpenter, C. M., and King, M. J.: Brucella Abortus in Milk and Its Relation to Undulant Fever, *J. Am. Pub. Health A.*, Symposium on Undulant Fever, 1929.

Simpson, W. M., and Fraizer, Eunice: Undulant Fever: Report of Sixty-Three Cases Occurring in and About Dayton, Ohio, THE JOURNAL, Dec. 21, 1929, p. 1958.

Simpson, W. M.: Undulant Fever: A Clinicopathologic Study of Ninety Cases Occurring in and About Dayton, Ohio, *Ann. Int. Med.* **16:** 238 (Sept.) 1930.

Giltner, Ward: Brucellosis: A Public Health Problem, Memoir 1, Agricultural Experiment Station, Michigan State College, East Lansing, Mich., March 1934.

Starr, L. E.: Undulant Fever: Its Relation to Brucelliasis in Domestic Animals, THE JOURNAL, March 24, 1934, p. 902.

Emmel, M. W., and Huddleson, I. F.: Abortion Disease in the Fowl, *J. A. Vet. M. A.* **28:** 578 (Nov.) 1929.

Huddleson, I. F., and Emmel, M. W.: The Pathogenicity of the Species of the Genus Brucella for the Fowl, Technical Bulletin 103, Agricultural Experiment Station, Michigan State College, East Lansing, Mich., August 1929.

Simpson, W. M.: Undulant Fever: Then and Now, *Hygeia* **13:** 112 (Feb.) 1935.

ASTHMA AND INFECTION AFTER EXPOSURE TO SULPHUR DIOXIDE

To the Editor:—I have seen several cases of asthma and chronic pulmonary infections that developed apparently after exposure to irritating sulphur dioxide gas. I have looked for literature on this phase of the relationship of sulphur dioxide exposure toward the causation of acute and chronic episodes of pulmonary disease but find the literature wanting.

NAT SPITZER, M.D., New York.

ANSWER.—The total number of cases of proved damage from exposure to sulphur dioxide gas is not sufficiently high to lead to statistical arrangements. Many of these cases have followed exposure to sulphur dioxide gas in the manufacture of electrical refrigerators; other cases have resulted from leaks in refrigerator equipment after installation in homes, hotels and elsewhere; still other cases have appeared in connection with claims against the owners of burning gob piles connected with coal mines. In the following publications may be found extensive comment relative to the action of sulphur dioxide on the respiratory tract:

Encyclopedia of Pathology, Hygiene and Social Welfare, volume 2, No. 31, International Labor Office, Geneva, 1930.

Journal of Industrial Hygiene **14:** 159 (May) 1932.

Bulletin 582, U. S. Bureau of Labor Statistics, page 45.

Henderson and Haggard: Noxious Gases and the Principles of Respiration Influencing Their Action, New York, Chemical Catalog Company, 1927.

From the first mentioned a brief excerpt is quoted:

"With those not accustomed to it, sulphur dioxide in quite weak concentration produces an acid taste in the mouth, an increased flow of saliva and irritation of the nasal, ocular and respiratory mucous membranes. Its action is less irritating to the conjunctival than to the respiratory mucous membrane, in which area sneezing and attacks of coughing occur which are often spasmodic. If the action is too severe or too prolonged then catarrhal inflammation, either bronchial or pulmonary, occur with viscid, often blood-stained expectoration. In some cases congestion and pulmonary asthma have been noticed. Serious cases caused by this gas are rarely fatal."

From the second cited publication a similar extract is presented:

"Exposure to sulphur dioxide under the conditions observed (100 subjects, forty-seven of whom had had from four to twelve years of exposure in the plant of one of the large manufacturers of electrical refrigerators) produces two distinct sets of effects: (1) irritation of the upper respiratory tract, which is at first acute in character, and subsequently subacute or chronic; and (2) systemic symptoms of a mild type such as are associated with any type of increased acid absorption or production in the tissues."

In the fourth citation the following may be found, not all of which is exclusively with reference to sulphur dioxide:

"Although the action of sulphur dioxide is mainly in the upper respiratory tract, severe exposure causes inflammation of the bronchi and lungs. The outstanding feature of inflammation in the lungs resulting from the action of irritant gases is pulmonary edema. The condition reaches its height in from twelve to twenty-four hours after the exposure. If death does not occur, it tends to regress within forty-eight hours.

"The edema induced by irritant gases differs from the edema of nonirritant origin in that the latter is usually particularly marked in the pendent portion of the lungs, while the edema arising from irritation is not greatly affected by gravity or the posture of the subject. Not all parts of the lungs, however, are equally involved in the inflammatory changes arising from the action of irritant gases. The irritant action upon the smaller bronchial tubes may cause some of them to constrict, so that the portions of the lungs to which they lead escape the action of the gas. Owing to this bronchoconstriction as well as to the plugging of the bronchi with sloughed mucosa and fibrin, areas of atelectasis and emphysema may occur in the edematous lung."

While some persons become inured to the action of fairly high concentrations of this gas and apparently are no longer irritated through prolonged day by day exposure, other persons apparently develop no protective mechanisms and readily present on trivial exposure, such as from 15 or 20 parts of the gas to a million parts of air, manifestations of irritation of the respiratory tract including on occasion typical asthmatic characteristics.

NONPROTEIN NITROGEN RETENTION

To the Editor:—In an arthritic patient with a history of suppurative otitis media and acute mastoiditis fifteen years ago, what significance would be given to a nonprotein nitrogen retention of 60 mg., with no evidence in the urine of albumin or kidney degeneration? At present there is no evidence of ear disease except deafness, and roentgen examination of the mastoid region shows some destruction of the mastoid cells. I might add that the patient has had several acute exacerbations of chronic polyarticular arthritis during the past fifteen years, confining him to bed for a period of three months on two occasions.

J. N. CROSS, M.D., Alexandria, Ohio.

ANSWER.—The normal nonprotein nitrogen is usually between 25 and 35 mg. per hundred cubic centimeters of blood. The figures run parallel to the urea estimation, so that little information is gained that cannot be more accurately and easily obtained by urea nitrogen estimation. With mild impairment of renal function the urea nitrogen often reaches from 16 to 30 mg. and the nonprotein nitrogen from 30 to 60 mg. There are many causes of an elevated urea or nonprotein nitrogen:

1. Bilateral diffuse kidney disease (acute, subacute, chronic or hypertensive).
2. Congenital polycystic kidneys.
3. Pyelonephritis or pyonephrosis.
4. Poisoning with heavy metals.
5. Passive congestion of the kidneys.
6. Dehydration; probably compensatory to maintain the osmotic pressure of the plasma at a normal level after excessive loss of salts from vomiting, diarrheas, and so on.
7. Obstruction in the urinary tract, especially when bilateral.

Many of the foregoing causes of increase in the nonprotein nitrogen can be determined by the history, physical examination, and careful examination of the urine.

In the case cited, the presence of focal infection in the middle ear and mastoid, and several attacks of rheumatic fever suggest the possibility of a nephritis. In most cases repeated urine examinations will reveal some albumin, casts or blood cells. A nonprotein nitrogen of 60 mg. on repeated examination speaks for some form of renal damage listed.

ALKALINITY OF URINE

To the Editor:—I have a patient whose urine is persistently alkaline. When the urine is alkaline there is frequent and painful urination. The only other abnormality found in the urine is the presence of considerable amounts of mucus. All the usual drugs for acidification of the urine have been tried with only temporary and partial amelioration of the symptoms. Daily irrigation of the bladder with boric acid solution affords the patient the greatest degree of comfort of any of the measures tried. Irrigations of the bladder with solutions containing acidophilus bacilli were tried but were not tolerated. The patient is a woman, aged 54. Last September she suffered what appeared to be a coronary thrombosis. She was put on absolute bed rest and symptomatic treatment. Weeks went by and she failed to make any improvement. Rather she became progressively weaker. Gastro-intestinal symptoms of anorexia and nausea became prominent. Early in January it was noted that her skin was becoming pigmented. Although her blood pressure had maintained a fairly constant level of 120 systolic, 80 diastolic, it was decided to try adrenal cortex extract. Marked improvement immediately followed the institution of treatment. Since the latter part of January she has been receiving daily doses of from 2 to 4 cc. She is now able to be out of bed and can walk short distances about the house. The gastro-intestinal symptoms have largely disappeared and the heart is apparently able to meet ordinary demands. However, the alkaline urine remains a troublesome factor. I should greatly appreciate any information you can give me as to the etiology and treatment of these urologic symptoms. Please omit name and address.

M.D., Montana.

ANSWER.—The progressive weakness, gastro-intestinal symptoms and pigmentation, and the improvement with adrenal cortex extract strongly suggest Addison's disease. In this disease there are occasional cases in which the blood pressure remains at a normal level for a considerable time.

The alkaline reaction of the urine, with considerable mucus, may be due to a chronic cystitis. Such urine usually contains a varying number of bacteria and a large amount of phosphates. The urine is also alkaline in alkalosis, owing to obstructing gastric lesions or severe vomiting, as well as with alkali therapy. Such an alkalosis can be corrected by administration of ammonium or calcium chloride.

The food intake also influences the urinary reaction. Two or three hours after a meal the acidity is reduced or the reaction may even be alkaline. This is due to the temporary absorption of the acid by the food in the stomach. Proteins tend to produce an acid urine and fruits a neutral or alkaline urine. Sodium or potassium citrate or sodium bicarbonate renders the urine alkaline.

In Addison's disease there is often an achlorhydria, and an increase in the nonprotein nitrogen, urea and sulphates in the blood, which is an indication of renal insufficiency and circulatory disturbance. There may be a creatinuria. The cortical extract exerts a beneficial effect on food ingestion and utilization, so that the achlorhydria and creatinuria usually disappear. There is a disturbance of chloride metabolism, and the patient often craves sodium chloride. Its administration is often very beneficial. The decrease in chlorides may be a factor in causing the alkaline urine.

Impaired renal function with nitrogen retention predisposes to the development of alkalosis as well as acidosis. Frequent alkali reserve estimations should be made in all such cases and the diet carefully regulated.

DANGERS OF LEAD ARSENATE AS SPRAY IN ORCHARDS

To the Editor:—Have you any information in regard to symptoms probably resulting from the handling of lead arsenate in spraying orchards over a period of years?

WILLIAM G. EXTON, M.D., Newark, N. J.

ANSWER.—The use of lead arsenate for insecticidal purposes has given rise to reports both of lead and of arsenic poisoning. Lead poisoning is believed to be more common than arsenic poisoning. In the manufacture of this agent, lead poisoning is fairly frequent, while systemic arsenic poisoning rarely arises or at least is rarely diagnosed. In one instance connected with orchard spraying, the farmer's residence was situated at the lower edge of a hillside orchard. Currents of air carried some of the spray containing arsenic onto the roof and there deposited it. The farmer made use of cistern water collected off the roof, but only his wife used the cistern water for drinking purposes. In due time she developed a totally disabling disorder diagnosed as arsenic poisoning, and arsenic was found in the cistern water. Hamilton's comment on lead arsenate as found in "Industrial Toxicology" (Harper and Brothers, 1934) is as follows: "In regard to lead arsenate the curious fact is poisoning often takes the form of lead poisoning, not arsenic, as in a case of Aub's which followed long exposure to lead arsenate used as a spray. This was in a man of forty-two years who had for twenty-seven years worked in the Massachusetts State Forestry Department spraying lead arsenate on trees. During each spraying season he had an attack of colic, then double wrist drop came on which lasted for twelve years before his death from pneumonia, and during the last three years he had had difficulty in walking. At autopsy lead was isolated from the long bones." It is conceivable that lead and arsenic poisoning might coexist or might arise consecutively.

TREATMENT OF SYPHILIS

To the Editor:—Please outline the proper treatment for a woman, aged 28, who has paralysis of one pupil and 4 plus Wassermann and Kahn reactions. She married at 14 and has been several times pregnant with miscarriages, some due to natural causes, some to interference. She was divorced and remarried about one and one-half years ago. The present husband's blood gives a negative reaction. The general examination gave negative results. She has had one course of bismuth treatment and seven neoarsphenamine injections with return of the pupillary contraction to normal. Would the kind and amount of treatment be very different in the case of a person 65 years of age? Please omit name.

M.D., Connecticut.

ANSWER.—Treatment with neoarsphenamine and heavy metals, bismuth or mercury compounds in alternating courses, should be continued for at least a year. In the interim between courses, iodides should be administered. At the end of a year the serum reaction of the blood should be checked and a spinal puncture done to determine whether the case is one of asymptomatic neurosyphilis or an early parenchymatous involvement of the nervous system. Further treatment will depend on the condition of the spinal fluid. In positive cases, tryparsamide should be used or some form of fever therapy. The kind and amount of treatment would be decidedly different in a person 65 years of age. The arsphenamines must be given with great caution in older people with an impaired cardiovascular apparatus.

GLAUCOMA

To the Editor:—I have a case of chronic glaucoma with greatly reduced vision in one eye, the other being recently enucleated. There is no inflammation and no pain. The pressure varies from 30 to 40 mm. of mercury. There is some exudate on the posterior side of the lens, which resembles an incipient cataract. The eye recently enucleated showed this exudate to a marked degree, yet the inside of the lens did not seem to be affected. The question is At what pressure will nerve destruction take place? Should the eye be operated on as long as the pressure can be maintained with the aid of mydriatics? Please do not publish name or town.

M.D., Oklahoma.

ANSWER.—The amount of intra-ocular pressure as measured by the tonometer is no indication of the necessity for surgery. A numerical value cannot be placed on so-called normal pressure, for normal pressure is that degree which the tissues of the eye can withstand without damage to function. Consequently, repeated examinations of the peripheral visual field, of the central visual field and of visual acuity are necessary to determine whether or not the existing pressure is pathologic for the eye in question. If these functions are damaged by the pressure of from 30 to 40 mm. of mercury, that pressure is greater than the eye can withstand and surgical intervention is indicated. On the other hand, if there are no losses in the visual fields and the visual acuity remains unchanged, the same pressure is not above the normal range for that eye.

POSSIBLE INFECTION OF ETHMOID SINUSES

To the Editor:—A man, aged 40, with a right chronic purulent otitis media, has had a slight continuous discharge for the past ten years. There is a large central perforation in the drum. Examination of the nose shows a deviated septum to the left, with a large polyp probably arising from the ethmoid. Roentgen study with iodized oil shows cloudy ethmoids and maxillaries. The capacity of the maxillaries is 7 to 9 cc. of iodized oil. The emptying time is good. What therapeutic procedure is advisable? Please omit name.

M.D., New York.

ANSWER.—Cases presenting a large central perforation, which usually show no involvement of bone, are seldom proper subjects for aural operation. Even though radical mastoidectomy is performed in some of these cases, suppuration continues in many. As long as there is no bone involvement, there is usually no indication for the radical operation. However, since this type of case often persists because of constant infection by way of the eustachian tube, any nasal or nasopharyngeal infection should be treated. If, therefore, there is evidence of involvement of the nasal accessory sinuses, treatment directed toward them is indicated. If there is disease of the ethmoid with polyp formation, ethmoidectomy is probably indicated. The use of boric acid alcohol solution in the middle ear by way of the external auditory canal is sometimes beneficial in these cases.

WASSERMANN TEST IN VINCENT'S ANGINA

To the Editor:—Kindly advise me whether it is probable that a persistent Vincent's throat (the bacilli and spirilla have been isolated a number of times in the last five months) could produce a positive blood Wassermann reaction. The particular patient I have in mind gives no history that would suggest a syphilitic infection, although she has had this persistent Vincent's condition for five months. The literature I have available says that the Wassermann reaction is always negative in Vincent's angina yet I would think that because of its being a spirillum infection, over a period of months, the bacteria might enter the blood stream and give a positive Wassermann reaction. I would appreciate your opinion or information where I can obtain authoritative literature on the subject.

M.D., Chicago.

ANSWER.—The Wassermann reaction is not positive in Vincent's angina. The presence of a positive Wassermann reaction must be attributed to a syphilitic infection and not to the Vincent infection. The fusiform bacilli and spirilla of Vincent's angina are very different from Spirochaeta pallida in their pathogenicity and in the lesions produced. It is not to be expected, therefore, that they should produce similar serologic reactions. The books of Kolmer and Kahn on the diagnosis of syphilis discuss the specificity of the Wassermann and Kahn tests.

Perhaps the fact that arsphenamine has great therapeutic value in Vincent's infections as well as in syphilis has led to the incorrect view that Vincent's angina may produce a positive Wassermann reaction. The patient being a woman, a history is of but little value in excluding syphilis. The positive Wassermann reaction obtained from a competent laboratory is certainly an indication for antisyphilitic therapy, which will also clear up the Vincent's infection in most cases.

OCCIPITAL HEADACHE—HEART MURMURS

To the Editor:—Kindly explain, if possible, the mechanics of (1) occipital headache in intestinal disorders and (2) heart murmur heard only when the patient is in the horizontal position and its significance.

HARRY HALLARMAN, M.D., New York.

ANSWER.—1. We are unable to furnish an explanation of the mechanics of occipital headaches in gastro-intestinal disorders. Headaches occur not infrequently in patients with gallbladder disease and duodenal ulcer. Dr. Kleitman of the department of physiology of the University of Chicago in a study of hunger contraction mentioned several years ago the occasional occurrence of headache with retrograde peristalsis in the duodenum. The headache may also be of toxic or migrainous origin.

2. The heart murmurs heard only when patients are in the horizontal position are mostly cardiorespiratory in origin, occurring with cardiac systole by compression of air out of the margins of the overlying lung. They are of no clinical significance and are not heard when the individual is in the upright position, because of lack of the close contact that obtains in the horizontal one.

PLASTIC OPERATIONS ON POSTERIOR PILLARS AFTER TONSILLECTOMY

To the Editor:—A girl, aged 16 years, had her tonsils removed several years ago and has a marked scarring and binding down of the posterior pillars on both sides. Resonance is poor. I would appreciate your opinion as to the success of a plastic operation separating the pillars and temporarily suturing in some oil silk in an attempt to get some flexibility. The patient has also a colloid goiter. Please omit name.

M.D., Texas.

ANSWER.—Plastic operations of this character are difficult to perform and the results are not always pleasing. They should be undertaken if the patient suffers from marked disability, but the possibility of a poor result should be explained. The operation mentioned might work, but the oiled silk or other material used to prevent the reformation of adhesions would have to be kept in for a week or two.

J. E. MacKenty (Nasopharyngeal Atresia, *Arch. Otolaryng.* **6**:1 [July] 1912) described an operation, which has been valuable in the hands of some. This procedure depends for its success on the formation of palatal flaps in such a fashion that mucous membrane and not raw edges approximate. Dilation too should be practiced for weeks after.

USE OF HENNA WHITE ON HAIR

To the Editor:—I have a patient who has asked me whether or not henna white would harm her hair or scalp. Kindly omit name.

M.D., Iowa.

ANSWER.—Henna white is a bleach, varying in composition with various users. One formula, sodium perborate, 18 Gm., henna leaves, 2 Gm., affords an excuse for the name. No other excuse can be seen for the waste of henna leaves. Some use hydrogen dioxide alone, others make a paste by combining it with magnesium carbonate. Another formula is 68 parts of magnesium carbonate and 32 parts of sodium perborate. This is made into a paste with hydrogen dioxide diluted with an equal quantity of water. All such preparations tend to make the hair brittle. No other harm is done unless loss of the natural color can be called harmful. White henna or henna white is a name used for any bleaching preparation.

REACTIONS TO DIPHTHERIA TOXOID

To the Editor:—Is there an increased danger in using the single dose alum precipitated toxoid in children with possible allergy over the usual two dose toxoid? In using the two dose toxoid what is the interval between doses that gives the optimal immunizing effect? Please omit name and address.

M.D., Illinois.

ANSWER.—There is no increased danger in using the single dose of alum precipitated toxoid in children with possible allergy over the usual two dose toxoid.

In using the two dose toxoid the optimal immunizing effect between doses seems to be produced at about monthly intervals.

Severe reactions in allergic individuals who have been given alum precipitate toxoid have not been reported.

DINITROPHENOL AND LYMPH GLANDS

To the Editor:—I wish to ask whether dinitrophenol will produce hyperplasia and hypertrophy of the lymphatic glandular tissue. A woman came to me who had taken this drug for obesity. The exact quantity she did not remember but at one time she was using fifteen tablets a day. The glandular enlargement involves alone the anterior cervical group bilaterally. The enlargement is pronounced and resembles Hodgkin's disease. This trouble has been present six months and first began two months after the patient stopped the drug. Please omit name and address.

M.D., Indiana.

ANSWER.—Dinitrophenol does not produce glandular enlargement as far as is known from published reports. One large series of about 200 patients has been followed without this being observed as a complication. Dogs given three times the therapeutic dose daily for six months show no adenopathy as observed grossly or by microscopic study of their organs. In addition, the drug is probably completely excreted from the body within about three days. All these facts taken together make it extremely unlikely that a glandular enlargement beginning two months after the drug was stopped could have any connection with its administration.

CONVALESCENT BLOOD IN PUERPERAL SEPTICEMIA

To the Editor:—In treating a patient with puerperal septicemia, would blood from a patient who has recovered from a similar infection be more beneficial for transfusions? If blood from a cured patient has special antibodies, how long would they be likely to remain in the blood stream? Kindly omit name.

M.D., West Virginia.

ANSWER.—There are good reasons to believe that blood from a patient who has recovered from puerperal septicemia would be more beneficial in the treatment of puerperal septicemia than the blood from a person who has not had the disease. It is not possible to say how long the special antibodies may persist in the blood after recovery from puerperal septicemia, but indications are that they may be present at least to some extent for many years.

OBESITY IN CHILDREN

To the Editor:—I wish to know the treatment recommended for overfat children between the ages of 8 and 12 whose metabolism is around normal and wish the treatment recommended with thyroid extract and pituitary whole gland and wish to give this by mouth. If the pulse is normal is the treatment perfectly safe if children are at least 15 to 25 pounds (7 to 11 Kg.) overweight for their age? Please omit name.

M.D., Alabama.

ANSWER.—The treatment of obese children, normal in other respects, by glandular therapy cannot be recommended. The treatment should be dietary and should be directed at establishing a new and better food habit, so that once the excess weight is lost it does not reappear. The effects obtained with glandular products, when the diet is unchanged, are not only temporary but may actually cause harm by disturbing the normal endocrine balance. With regard to the specific glandular products mentioned, only the thyroid extract has been definitely shown to be effective when taken by mouth. The query does not contain sufficient data to enable one to offer specific dietary advice.

INFECTION OF SEMINAL VESICLES

To the Editor:—About one year ago, a man, aged 20, came to my office five days after contracting a gonorrheal infection. He had a marked discharge, which persisted for two months. During this time he was taking injections of 0.5 per cent strong silver protein twice daily with much diminution in the amount of the discharge. About three months after the institution of treatment, sounds were passed for two months to prevent stricture formation, while injections of 5 per cent silver nucleinate were now used. About five months ago an epididymitis developed, which cleared up after two weeks. For the past four months he has been receiving prostatic massage. There is still a slight morning mucoid discharge, and smears are still positive for the gonococci. Is there any other treatment that you could suggest? Please omit name and address.

M.D., Pennsylvania.

ANSWER.—In view of the fact that the patient had an epididymitis, it is quite evident that the seminal vesicles as well as the prostate gland are involved in the infection. In carrying out prostatic massage sometimes the vesicles are missed and may be responsible for the continuation of the presence of organisms in smears. Massage of the vesicles as well as of prostate gland, followed by an instillation into the prostatic urethra of 0.25 per cent silver nitrate solution, gradually increasing up to 1 per cent, should be repeated about every five days.

SAND BLAST HELMETS

To the Editor:—I am surgeon for a large foundry. In the sand blast operation the men are protected by masks made of hardened rubber. The air is purified by passing through water. The question has been raised as to what is the best method of sterilizing these masks after they have been used by one person and before they are put on by another employee.

M.D., Ohio.

ANSWER.—The U. S. government, in its specifications for sand blast helmets purchased by its various departments, requires that each article be capable of passing either one of the following sterilization tests:

(*a*) Immersion for ten minutes in a solution of formaldehyde made by placing one part of 40 per cent solution of formaldehyde in nine parts of water, or

(*b*) Subjection to sterilization by a moist atmosphere of antiseptic gas, preferably formaldehyde, for a period of ten minutes, at room temperature.

It has been suggested that care should be taken to remove all the formaldehyde from the masks by washing with water before they are placed in use.

COMPARISON OF BLOOD OF MAN AND ANIMALS

To the Editor:—Can you suggest any textbook or periodical references that will deal with the following subjects: A study of the evolution of blood from the simplest circulatory fluid to the highly developed blood of man, or a comparative study of the vascular fluids found in all the animals. The textbooks in this library do not cover these subjects at all and I would appreciate your assistance very much.

Librarian, Harper Hospital. JEANNE REED, Detroit.

ANSWER.—The best way to obtain references for these subjects is to look up each phase of the circulatory fluid in each animal and compare it with man. Books on comparative anatomy will give only part of the subject. Data on the formed elements of the blood and their evolutionary history may be obtained from the article by H. E. Jordan in the *Quarterly Review of Biology* (**8**:53, 1933) and the monograph by Dr. M. Hausman (Entstehung und Funktion von Gafässystem und Blut auf cellular-physiologischer Grundlage, Basel, Benno Schwabe & Co., 1935).

FALSE POSITIVES IN BENEDICT SUGAR TEST

To the Editor:—Will you kindly give me a list of drugs and other substances, other than dextrose, that reduce copper in Benedict's solution? Please omit name.

M.D., Massachusetts.

ANSWER.—The copper compound in Benedict's solution may be reduced by a number of chemical substances. Chloroform will give a reduction and may be mistaken for sugar. When used as a preservative, it should be removed by heating the urine before testing for sugar. Formaldehyde may also lead to reactions simulating sugar. Boric acid may interfere with sugar determination. Benedict's solution is promptly reduced by alkapton acids or the conjugated glycuronic acids. Chloral may also give a reduction.

The first time a urine of any patient shows reduction, further tests are indicated to determine whether the substance is sugar, and the kind of sugar.

Medical Examinations and Licensure

COMING EXAMINATIONS

AMERICAN BOARD OF OPHTHALMOLOGY: The Cincinnati examination previously announced will not be held. The next examination will be given in St. Louis, Nov. 18. *Application must be filed before Sept. 15.* Sec., Dr. William H. Wilder, 122 S. Michigan Ave., Chicago.

American Board of Otolaryngology: Cincinnati, Sept. 14. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PEDIATRICS: Philadelphia, Oct. 10 and St. Louis, Nov. 20. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF RADIOLOGY: Detroit, Dec. 1-2. Sec., Dr. Byrl R. Kirklin, Mayo Clinic, Rochester, Minn.

ARIZONA: *Basic Science.* Tucson, Sept. 17. Sec., Dr. Robert L. Nugent, Science Hall, University of Arizona, Tucson. *Medical.* Phoenix, Oct. 1-2. Sec., Dr. J. H. Patterson, 826 Security Bldg., Phoenix.

COLORADO: Denver, Oct. 1. Sec., Dr. Harvey W. Snyder, 422 State Office Bldg., Denver.

IDAHO: Boise, Oct. 1. Commissioner of Law Enforcement, Hon. Emmitt Pfost, 205 State House, Boise.

MINNESOTA: *Basic Science.* Minneapolis, Oct. 1-2. Sec., Dr. J. C. McKinley, 126 Millard Hall, University of Minnesota, Minneapolis.

MONTANA: Helena, Oct. 1. Sec., Dr. S. A. Cooney, 7 W. 6th Ave., Helena.

NATIONAL BOARD OF MEDICAL EXAMINERS: The examination will be held in all centers where there are Class A medical schools and five or more candidates desiring to take the examination, Sept. 16-18. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

NEW HAMPSHIRE: Concord, Sept. 12-13. Sec., Board of Registration in Medicine, Dr. Charles Duncan, State House, Concord.

NEW YORK: Albany, Buffalo, New York and Syracuse, Sept. 16-19. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

OKLAHOMA: Oklahoma City, Sept. 10-11. Sec., Dr. James D. Osborn Jr., Frederick.

PUERTO RICO: San Juan, Sept. 3. Sec., Dr. O. Costa Mandry, Box 536, San Juan.

RHODE ISLAND: Providence, Oct. 3-4. Dir., Department of Public Health, Dr. Edward A. McLaughlin, 319 State Office Bldg., Providence.

WISCONSIN: *Basic Science.* Madison, Sept. 21. Sec., Professor Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

New York January Examination

Mr. Herbert J. Hamilton, chief, Professional Examinations Bureau, reports the written examination held by the New York State Board of Medical Examiners in Albany, Buffalo, New York and Syracuse, Jan. 28-31, 1935. The examination covered 9 subjects. An average of 75 per cent was required to pass. Two hundred and twenty-nine candidates were examined, 175 of whom passed and 54 failed. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
University of Arkansas School of Medicine	(1932),	(1934)	2
George Washington University School of Medicine		(1934)	1
Georgetown University School of Medicine	(1934, 2)		2
Howard University College of Medicine	(1934, 3)		3
Emory University School of Medicine		(1934)	1
University of Georgia School of Medicine		(1932)	1
Loyola University School of Medicine	(1934, 2),	(1935)	3
Rush Medical College		(1934)	1
School of Medicine of the Division of the Biological Sciences	(1934, 2)		2
University of Illinois College of Medicine		(1934)	1
University of Louisville School of Medicine		(1932)	1
University of Maryland School of Medicine and College of Physicians and Surgeons		(1934)	1
Boston University School of Medicine		(1934)	1
Harvard University Medical School	(1930),	(1932)	2
Tufts College Medical School	(1931),	(1933)	2
University of Michigan Medical School		(1933)	1
Wayne University College of Medicine	(1933),	(1934)	2
St. Louis University School of Medicine	(1933),	(1934)	2
Washington University School of Medicine	(1929),	(1931)	2
Creighton University School of Medicine		(1934)	1
Albany Medical College		(1934, 4)	4
Columbia University College of Physicians and Surgeons	(1933, 2),	(1934, 3)	5
Cornell University Medical College	(1933, 3),	(1934)	4
Long Island College of Medicine	(1933),	(1934, 6)	7
New York Homeopathic Medical College and Flower Hospital		(1934, 4)	4
Syracuse University College of Medicine		(1934, 5)	5
New York University, University and Bellevue Hospital Medical College	(1932),	(1933, 2), (1934, 8)	11
University of Buffalo School of Medicine		(1934, 8)	8
University of Rochester School of Medicine	(1932),	(1934, 4)	5
Hahnemann Medical College and Hospital of Philadelphia	(1932),	(1933)	2
Jefferson Medical College of Philadelphia	(1932),	(1933, 4), (1934, 2)	7
University of Pennsylvania School of Medicine	(1927),	(1932), (1933), (1934)	4
Woman's Medical College of Pennsylvania	(1933),	(1934)	2
Medical College of the State of South Carolina		(1932)	1
University of Tennessee College of Medicine		(1933)	1
University of Wisconsin Medical School	(1933),	(1934, 2)	3
University of Alberta Faculty of Medicine		(1933)	1
Dalhousie University Faculty of Medicine		(1933, 2)	2
Queen's Univ. Faculty of Medicine	(1928),	(1929), (1933, 2)	4
Univ. of Toronto Faculty of Med.	(1931),	(1932, 3), (1933)	5
University of Western Ontario Medical School		(1934)	1

McGill University Faculty of Medicine.....(1932), (1934)	2
Medizinische Fakultät der Universität Wien (1926), (1932),* (1933, 2),* (1934, 2)*	6
Université Catholique de Louvain Faculté de Médecine.(1933)	1
Licentiate of the Royal College of Phys. of London and Member of the Royal College of Surgs. of England (1934, 3)	3
Université de Paris Faculté de Médecine...(1930), (1934, 3)*	4
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin .....(1933),* (1934)*	2
Hamburgische Universität Medizinische Fakultät.....(1933)*	1
Johann Wolfgang Goethe-Universität Medizinische Fakultät, Frankfurt-am-Main .....(1934)*	1
Schlesische-Friedrich-Wilhelms-Universität Medizinische Fakultät, Breslau .....(1934, 2)*	2
Universität Köln Medizinische Fakultät.....(1932),* (1932)	2
Universität Leipzig Medizinische Fakultät.....(1928)	1
Magyar Királyi Ferencz József Tudományegyetem Orvostudományi Kara, Szeged, Hungary.....(1922)	1
Magyar Királyi Pázmány Petrus Tudományegyetem Orvosi Fakultasa, Budapest .....(1932)*	1
Regia Università degli Studi Roma Facoltà di Medicina e Chirurgia .....(1933)*	1
Regia Università degli Studi di Siena Facoltà di Medicina e Chirurgia.....(1932)*	1
Licentiate of the Royal College of Physicians of Edinburgh, of the Royal College of Surgeons of Edinburgh, and of the Royal Faculty of Physicians and Surgeons of Glasgow.....(1933),* (1934),* (1934)	3
University of Aberdeen Faculty of Medicine.....(1934)*	1
University of Glasgow Medical Faculty (1933),* (1933), (1934, 4)*	6
University of St. Andrews Conjoint Medical School, Scotland.....(1933),* (1934, 8),* (1934)	10
Universität Bern Medizinische Fakultät.....(1934, 4)*	4
Universität Zürich Medizinische Fakultät.....(1933)*	1
Université de Genève Faculté de Médicine (1933),* (1933), (1934)*	3

School	FAILED	Year Grad.	Number Failed
University of Arkansas School of Medicine		(1932)	1
Georgetown University School of Medicine		(1934)	1
Loyola University School of Medicine		(1935)	1
Northwestern University Medical School		(1933)	1
Rush Medical College		(1930)	1
St. Louis University School of Medicine		(1934)	1
Creighton University School of Medicine		(1934)	1
Long Island College of Medicine		(1934)	1
New York Homeopathic Medical College and Flower Hospital		(1934, 3)	3
New York University, University and Bellevue Hospital Medical College		(1933)	1
University of Buffalo School of Medicine		(1933)	1
Hahnemann Medical College and Hospital of Philadelphia		(1931), (1934)	2
Jefferson Medical College of Philadelphia		(1932), (1934)	2
Medical College of the State of South Carolina		(1932)	1
Dalhousie University Faculty of Medicine		(1934)	1
University of Montreal Faculty of Medicine		(1925)	1
Medizinische Fakultät der Universität Wien		(1934, 4)*	4
Masarykovo Universita Fakulta Lékařská, Brno, Cze.		(1928)	1
Université de Paris Faculté de Médecine		(1929)*, (1932)*	2
Université de Toulouse Faculté de Médecine et de Pharmacie		(1934)*	1
Albert-Ludwigs-Universität Medizinische Fakultät, Freiburg		(1930)*	1
Albertus-Universität Medizinische Fakultät, Königsberg		(1933)*	1
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin		(1930, 2),* (1933)*	3
Magyar Királyi Pázmány Petrus Tudományegyetem Orvosi Fakultasa, Budapest		(1931)*	1
Regia Università degli Studi di Bologna Facoltà di Medicina e Chirurgia		(1934)*	1
Regia Università degli Studi di Padova Facoltà di Medicina e Chirurgia		(1932)	1
Regia Università degli Studi di Palmero Facoltà di Medicina e Chirurgia		(1920), (1932)	2
Regia Università degli Studi di Roma Facoltà di Medicina e Chirurgia		(1933),* (1934)*	2
Regia Università di Napoli Facoltà di Medicina e Chirurgia		(1931), (1932),* (1932), (1934, 2)*	5
Kiev Medical Institute		(1913)	1
Licentiate of the Royal College of Physicans of Edinburgh, of the Royal College of Surgeons of Edinburgh, and of the Royal Faculty of Physicians and Surgeons of Glasgow		(1934)	1
University of Edinburgh Faculty of Medicine		(1934)*	1
University of St. Andrews Conjoint Medical School, Scotland		(1934)*	1
Universität Bern Medizinische Fakultät		(1926), (1931), (1934)*	3
Université de Genève Faculté de Médecine		(1933),* (1934)*	2

One hundred and thirty-two physicians were licensed by endorsement from January 1 through May 20. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Medical Evangelists		(1932)	N. B. M. Ex.
University of Colorado School of Medicine		(1931)	California
Yale University School of Medicine		(1929)	N. B. M. Ex.
Georgetown University School of Medicine		(1934, 4)	Maryland
Howard University College of Medicine		(1933)	N. B. M. Ex.
University of Georgia School of Medicine		(1929)	Georgia
General Medical College, Chicago		(1923)	Illinois
Hahnemann Medical College and Hospital, Chicago		(1904)	Illinois
Loyola University School of Medicine		(1933), (1934, 2) (1934) Maryland, (1935) N. B. M. Ex.	New Jersey,
University of Illinois College of Medicine		(1931)	Indiana
Indiana University School of Medicine		(1926)	Indiana
State University of Iowa College of Medicine		(1931, 2) (1932), (1933, 3)	Iowa,
Johns Hopkins University School of Medicine		(1921) (1928), (1929), (1933)	Maryland,
University of Maryland School of Medicine and College of Physicians and Surgeons		(1930) (1931), (1932), (1933, 2), (1934, 2)	Puerto Rico, Maryland
Boston University School of Medicine		(1933)	N. B. M. Ex.
Harvard University Medical School		(1922), (1928), (1930), (1932) N. B. M. Ex.	
Tufts College Medical School		(1906) (1925)	Mass., Connecticut
University of Michigan Medical School		(1921)	Michigan
University of Minnesota Medical School		(1920), (1930)	Minnesota
Kansas City Medical College, Missouri		(1896)	R. Island
St. Louis University School of Medicine		(1933)	New Jersey
Washington University School of Medicine		(1927) (1933)	Illinois, Maryland
Columbia University College of Physicians and Surgeons		(1930), (1932, 3), (1933)	N. B. M. Ex.
Cornell University Medical College		(1932) (1931), (1932), (1933, 6) N. B. M.Ex.	Ohio,
Long Island College of Medicine		(1933)	New Jersey
New York Homoeopathic Medical College and Flower Hospital		(1932)	N. B. M. Ex.
New York University, University and Bellevue Hospital Medical College		(1930), (1933, 3)	N B. M. Ex.
University of Buffalo School of Medicine		(1932)	N. B. M. Ex.
University of Rochester School of Medicine		(1931) (1929), (1932) (1933) N. B. M. Ex.	Ohio,
Duke University School of Medicine		(1932)	N. B. M. Ex.
Ohio State University College of Medicine		(1930, 2)	Ohio
Hahnemann Medical College and Hospital of Philadelphia		(1930), (1934)	Maryland
Jefferson Medical College of Philadelphia		(1931)	N. B. M. Ex.
University of Pennsylvania School of Medicine		(1924) (1924), (1932) N.B. M. Ex.	Penna.,
Meharry Medical College		(1934)	Tennessee
University of Tennessee College of Medicine		(1932)	Tennessee
Vanderbilt University School of Medicine		(1931), (1932)	Tennessee
University of Texas School of Medicine		(1933)	Texas
University of Vermont College of Medicine		(1932)	N. B. M. Ex.
Medical College of Virginia		(1926), (1932)	Virginia
Univ. of Virginia Department of Medicine		(1932), (1934)	Virginia
Queen's University Faculty of Medicine		(1926)	Ontario
University of Western Ontario Medical School		(1927)	Ontario
McGill University Faculty of Medicine		(1926) (1929) N.B. M. Ex.	Nova Scotia,
University of Sydney Medical School		(1924)	England
Karl-Franzens-Universität Medizinische Fakultät, Graz		(1920)	Quebec
Université Libre de Bruxelles Faculté de Médecine		(1913)*	England
Université de Paris Faculté de Médecine		(1924)	France
Albert-Ludwigs-Universität Medizinische Fakultät, Freiburg		(1929)*	Germany
Friedrich-Alexanders-Universität Medizinische Fakultät, Erlangen		(1920)*	Germany
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin		(1923),* (1924)*	Germany
Georg August-Universität Medizinische Fakultät, Göttingen		(1931)*	Germany
Hamburgische Universität Medizinische Fakultät		(1925)*	Germany
Johann Wolfgang Goethe-Universität Medizinische Fakultät Frankfurt-am-Main (1920),* (1921),* (1923),* (1924, 2)*			Germany
Julius-Maximilians-Universität Medizinische Fakultät, Würzburg		(1914),* (1919),* (1922)*	Germany
Ludwig-Maximilians-Universität Medizinische Fakultät, München		(1914),* (1921),* (1924)*	Germany
Schlesische-Friedrich-Wilhelms-Universität Medizinische Fakultät, Breslau		(1912)*	Germany
Universität Heidelberg Medizinische Fakultät (1920),* (1925),* (1926)*			Germany
Universität Köln Medizinische Fakultät		(1921)*	Germany
National University of Ireland		(1927)	Ireland
Regia Università degli Studi di Genova Facoltà di Medicina e Chirurgia		(1924)	New Jersey
Regia Università degli Studi di Padova Facoltà di Medicina e Chirurgia		(1934)*	Maryland
Regia Università degli Studi di Roma Facoltà di Medicina e Chirurgia		(1933) Maryland,*	New Jersey
Regia Università degli Studi di Siena Facoltà di Medicina e Chirurgia		(1933)*	Maryland
Regia Università di Napoli Facoltà di Medicina e Chirurgia		(1920)	Texas
Regia Università di Torino Facoltà di Medicina e Chirurgia		(1922)*	Italy
University of Edinburgh Faculty of Medicine		(1932)	N. B. M. Ex.

* Verification of graduation in process.

Nevada May Examination

Dr. Edward E. Hamer, secretary, Nevada State Board of Medical Examiners, reports the oral and written examination held in Carson City, May 6-8, 1935. The examination covered 11 subjects and included 110 questions. An average of 75 per cent was required to pass. Two candidates were examined, both of whom passed. Four physicians were licensed by reciprocity. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Northwestern University Medical School		(1930)	89.3
Rush Medical College		(1923)	85.1

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of California Medical Department		(1913)	California
John A. Creighton Medical College		(1906)	Nebraska
Western Reserve University School of Medicine		(1931)	Ohio
Jefferson Medical College of Philadelphia		(1913)	Penna.

Book Notices

Stammering and Allied Disorders. By C. S. Bluemel, M.A., M.D., F.A.C.P. Cloth. Price, $2. Pp. 182. New York: Macmillan Company, 1935.

This is a splendid discussion by one of the keenest students of stuttering. Allied disorders are mentioned only to aid in understanding the nature and cause of stuttering. The term "stuttering" is preferable to "stammering," since the latter is used in several different senses. Bluemel divides stuttering into two types: primary, or basic, and secondary. Primary stuttering is regarded as due to a physiologic clash between the speech response, whether viewed, following Pavlov, as a conditioned (author's preference) or unconditioned reflex, and temporary or intermittent inhibition that obstructs it, with resulting secondary emotion. Total inhibition produces mutism. Inhibition is defined as a physiologic function that checks the conditioned reflex. It may affect inborn as well as conditioned responses. Although Bluemel insists that emotion is not the basic cause of primary stuttering and that physiologic inhibition can explain almost all the mysteries of primary stuttering, he fails to mention that in Pavlov's experimental work with animals it is most probable that a state of excitement, interest or expectation is aroused and is responsible for the so-called positive conditioning, while its absence occurs in negative conditioning. He fails to define the term "emotion" as he uses it. If he agrees to its definition as an excited state of the total animal machine (both "mind" and "body"), then the causes for inhibition enumerated by him (excitement, overstimulation, fatigue, illness, shock) produce emotion.

Secondary stuttering depends mainly on associative or so-called conditioned inhibition, resulting from negative conditioning to words, letters, persons and situations, and also leads to associative emotional responses. The symptoms (abnormal respiration, unwonted physical effort in speech, the use of starters, wedges and synonyms, embarrassment, self consciousness, confusion, fear, inferiority feelings, hypersensitive social attitudes) are attempts by the stutterer to escape his predicament and are but complications of primary stuttering. Although he states that the two types may coexist and that secondary "does not necessarily" replace primary stuttering, he does not deny that it may. Of course, if it does, emotion per se could be responsible for stuttering.

The principles of treatment are enumerated as (1) tranquilization (by rest, isolation, sedatives, calming atmosphere) to minimize the effects of inhibition at the onset of stuttering; (2) reenforcement of the conditioned speech response in various ways (by reading to the patient, speaking in unison, pronouncing difficult words for him when in speech distress, both alone and in class); (3) unconditioning by whispered speech, drawling speech, blindfolding during speech, and (4) extension of these ideas to as many environmental speech situations and as continuously as possible. Primary stuttering he regards as curable in most cases, but secondary stuttering less so, especially in confirmed adult stuttering. The author admirably discusses other current views, only to show their unsoundness.

Although it has been written primarily for teachers, stutterers and parents, no one seriously and scientifically interested in stuttering should fail to study this book. It is indeed a valuable contribution to the literature on this important problem.

Manchurian Plague Prevention Service. Memorial Volume, 1912-1932. Edited by Wu Lien-Teh, Director, National Quarantine Service. Cloth. Pp. 469, with illustrations. Shanghai: National Quarantine Service, 1934.

The delegates who attended the ninth Congress of the Far Eastern Association of Tropical Medicine at Nanking in October 1934 received this handsome memorial volume recording the work of the Manchurian Plague Prevention Service for the two decades of its functioning under Chinese auspices under the able direction of Dr. Wu Lien-Teh. The Japanese occupation of Manchuria has shifted the direction since 1932 into other hands.

The wide distribution of plague as the result of the last pandemic, not only in the tropics but also in temperate zones, and the fact that the pneumonic form was prevalent in man in the winter months in Manchuria, both serve to create a basis for a general interest in the subject among physicians throughout the United States. Added reasons for such interest lie in the facts that in man the pneumonic form of plague is generally fatal, is accompanied by coughing, and is spread by droplet infection in cold climates. Hence no insect vector, such as the rat flea, is directly involved, and no mammalian reservoir host, such as the rat, is necessarily concerned at all throughout the period of a human holocaust. The rodent reservoir host is, however, the background in which continuously lurks the ever imminent danger of the flare of pneumonic plague in man. It is for this reason that the invasion of sylvatic plague among the ground squirrels of the foothills of the Sierras and Cascade Mountains creates a widening menace in the United States.

The sequence of events in the epidemiology of the pneumonic form of the plague in Manchuria was as follows: 1. Deaths by plague (of the pneumonic type in experimental rodents) occurred among the Tarabagan or Siberian marmot, Arctomys bobac, extensively collected for its fur, which is used as a substitute for Russian sable. 2. The migrating young of the year may enter old burrows, the former inmates of which died of the plague, and they also may acquire the infection and die in their burrows. Other rodents in Manchuria also die of the plague. 3. Chinese coolies from Shantung and elsewhere to the number of 10,000 visit the marmot territories from August to October, collect the skins, and often dig the marmots out of their burrows and may eat their flesh. These trappers gather in the Manchurian centers of the fur trade from October to November in crowded, insanitary quarters with their (in some instances) germ-laden skins, and, when the sales are made, return to their homes in China. This sets the stage for the tragedy that follows.

In the two major epidemics of pneumonic plague in Manchuria of 1910-1911 and 1920-1921 there were sporadic cases of bubonic plague in August, with the subsequent appearance of the pneumonic type in October, followed by the rapid spread of this form of the disease as the trappers exposed to infection from the rodents streamed back to their homes. Persons exposed to droplet infection from human cases scattered from each center after the first death, unless restrained by the authorities in their efforts to isolate those who had been thus exposed. The rapid course of the disease, the ignorance and terror of the people, and the violence of the soldiery made control doubly difficult. The exclusive operation of human agency by droplet or other contagion is emphasized by the fact that not a single case of rat plague was detected in 13,000 rats examined in cities in which the human pneumonic plague was at the time in full swing. Toward the close of the epidemic, human cases of pulmonary (septicemic) type tend to increase in number.

Dr. Wu cites the prevalent opinion that the rodent disease has long been known among the Manchurian peasantry and the trappers, and that they usually expected the disease among men to run its course and die out. Occasional cases of bubonic and even of pneumonic plague came to record in Manchuria or Siberia between 1911 and 1921, but no great epidemic developed in that interval. The reservoir of rodent plague did not overflow in the interval, as in the years of the two epidemics.

The physicians of the United States should be aware that sylvatic plague is established in this country among the rodents, as it is in Manchuria. The California ground squirrel (Citellus beecheyi Richardson) and the Oregon ground squirrel (Citellus oregonus Merriam) harbor the infection, for which their fleas are the insect transmitters. Fortunately the centers of plague infection, as far as known, are few and have been closely watched by the federal and the California state authorities. Two new centers have, however, appeared in the past summer with devastation of the local rodent populations, both in regions with a sparse human population. Only a single human bubonic case occurred in each of these rodent areas, one of which was chronic. It is obviously the duty of the federal authorities to see to it that this situation does not get out of control for lack of adequate and thorough inspection.

This memorial volume of Dr. Wu's gives the detailed history of the two Manchurian outbreaks, the microscopic appearance of the lesions, the pathologic changes and the clinical symptoms. There is also a study of insect transmission among rodents, a list of known rodent hosts and of the parasites of these hosts, and discussions of the perpetuation of the plague among rodents and of the "original home" of the plague. Some account of the work of the Plague Prevention Service on cholera and in other fields is also included in the book.

Dr. Wu has rendered a great service to the cause of preventive medicine by his presentation in English of the scattered data in the Chinese reports on these two disastrous epidemics of the most dangerous form of the plague. His book makes it clear that rat control can by no means be trusted to serve as a protection from the invasion of plague in its worst form.

Mental Health: Its Principles and Practice, with Emphasis on the Treatment of Mental Deviations. By Frank E. Howard, Ph.D., Professor of Education and Psychology, Middlebury College, and Frederick L. Patry, M.D., Psychiatrist, State Education Department, University of the State of New York. Cloth. Price, $3.50. Pp. 551, with 14 illustrations. New York and London: Harper & Brothers, 1935.

Mental Health is a somewhat misleading name for this book, as the subject matter is mainly concerned with the contributions of psychiatry to the understanding and management of educational problems. The book is similar to the volume of Anderson on Psychiatry and Education and the volume of Bassett on the School and Mental Health. It differs from previous similar attempts to correlate the fields of education and psychiatry in that the approach is entirely that of the psychobiologic school of Meyer. The book might have been called Educational Psychobiology. This clear and forceful presentation of the credo of the psychobiologists is welcome, for previously there was no handy epitome of this significant point of view.

The pluralistic approach to psychiatric problems with its emphasis on the behavior of the total human organism appeals to the unprejudiced reader as a form of sound eclecticism. The insistence of the psychobiologist that "he refuses to be straitjacketed by any single school of thought or practice which presumes to hold the key to exclusive salvation" should be placed before scientific assemblies to remind them that propagandism and fanaticism have no place in scientific research. The cacophanous terminology of objective psychobiology has not yet been accepted by psychiatrists in spite of the widespread adherence to the fundamental tenets of Meyer's teachings. The classification of the psychoses and neuroses, therefore, is the least commendable part of this interesting work.

After a rather long introduction and exposition of the psychobiologic teachings and a review of the principles of modern psychopathology, including mental mechanisms, the authors discuss the specific problems of the school child. The criticism of the emphasis on the intellect in the school system and the urging of greater attention to training of character, personality, emotional attitudes and the individual's total reaction to reality is no longer a cry in the wilderness. The rôle of conative and affective factors in performance is being emphasized in all recent educational programs. The specific suggestions for reconstructing personality and handling deviations in child behavior are worthy of study. The psychobiologic balance chart, which will permit adequate records of the psychologic development of pupils physically, intellectually, emotionally and socially, is a worthy attempt to formulate some practical plan of gathering the necessary data for a more fundamental understanding of the nature of mental illness.

The chapter on the visiting teacher, who is a sort of liaison officer between the school and the other institutions that modify and influence the pupil's behavior, should be read by every psychiatrist. The classification of children's behavior disorders and the outlines for case studies contain invaluable data for clinical organization. The group of concrete illustrations on page 331 of the personality twists and shortcomings of professional people is an unusually rich fragment of descriptive psychiatry. The Peyser plan for character building and prevention, Miss Farrel's classic work on the education of mental defectives and the review of the child guidance movement are all worthy of the attention of every medical practitioner and student.

The volume is essentially addressed to laymen and occasionally a certain amount of oversimplification is evident, perhaps for pedagogic purposes. The repeated emphasis on the unquestionable rôle of bad habit in the etiology of the psychoses and neuroses strikes one as rather dogmatic. The statement on page 259 that "the possibility of recovery of schizophrenia is conditioned almost entirely on its early detection and proper treatment by a skilled psychiatrist" will be challenged by many. The authors obviously fail to place the proper emphasis on the rôle of subconscious constellations as determinants of human behavior. This decided stress on the rôle of the environment in causing behavior disturbances is perhaps a necessary check on some of the recent unbridled tendencies to disregard the rôle of such exogenous factors.

It would be well to banish the term insanity from a textbook of this type unless problems of responsibility are discussed from the legal standpoint. The text is readable, though there is a great deal of repetition. The use of some obsolete words, such as labileness, imaginal and frustranious, impairs the clarity of the text. The authors failed to mention the rôle of pernicious anemia in accounting for the mental symptoms of a woman whom they discussed on page 70. The reports of neurologic examinations of the cases presented in detail need revision. The reaction of pupils to light and in accommodation does not belong under the second cranial nerve. Convergence is not a function of the optic nerve. The division of the examination of cranial nerves into anterior, middle and posterior hindbrain segments is confusing and has no clinical value.

Thérapeutique médicale. VIII: Système nerveux. Par M. Loeper. Avec la collaboration de Alajouanine et al. Paper. Price, 50 francs. Pp. 379, with 21 illustrations. Paris: Masson & Cie, 1935.

The first portion of this book, by Loeper, deals with general therapeutics, including a study of nerve sedatives, hypnotics, analgesics, anesthetics and tonics. He considers bromides, valerian and borax sedatives to the general nervous system, and the drugs of the atropine series mesencephalon sedatives because of their value in parkinsonian tremor, which is not affected by the first mentioned group. The term "sympathicolytic" is proposed for sedatives of the sympathetic nerve system, and under this heading are classified ergotamine, yohimbine and crataegus. The belladonna series is spoken of as "parasympathicolytic" (why not "vagolytic") in contrast to the sympathicotonic epinephrine and ephedrine and the vagotonic physostigmine. Among the general anesthetics, evipal is given a rather special discussion, which it probably deserves. Under hypnotics, the synergism of trional and paraldehyde, and of opiates with chloral is emphasized; so is the increase in analgesic value of the combination of coal tar analgesics with barbiturates. The special therapy of diseases of the nervous system is discussed by a number of specialists, in "whose conscientiousness and competence" the editor-in-chief has confidence. In the discussion of apoplexy, Alajouanine mentions statistics of Foix, according to which cerebral softening is four times as frequent as hemorrhage and partial obliteration of the blood vessels twice as common as total obliteration. Mollaret classifies the various methods of pyretotherapy according to therapeutic value in diseases of the nervous system as follows: malaria therapy, short wave electropyrexia, then fever induced by sulphur in oil and lastly that excited by intravenous vaccine administration. It finds its chief place in syphilitic diseases of the nervous system and is of doubtful value and even harmful in most others. In the treatment of epilepsy, Pagniez lists phenobarbital as the remedy first in value, provided it is given in sufficient dosage and without interruption. When cerebral hypertension is suspected, concludes Lemaire, the tension of the cerebrospinal fluid should be measured and differentiation made between free and block-d hypertension. Decompression by lumbar puncture must be performed slowly, to avoid bulbar block. Osmotherapy is of doubtful value: massive venesection is more valuable in acute conditions. In chronic cerebral hypertension due to tumor, operative decompression should be undertaken before vision is much damaged, if radiotherapy fails. The localization of cerebral tumors and subsequent operation should be undertaken promptly, emphasizes Martel. Radiotherapy should be considered merely a treatment for cranial

hypertension due to cerebral tumors rather than for the tumors themselves, says Haguenay, in a special chapter devoted chiefly to the roentgenologic technic. In the treatment of migraine, Vallery Radot attempts to differentiate various etiologic forms: endocrine, digestive, biliary, allergic and cervical neuritis from a group of migraines of indeterminate origin. The book concludes with a chapter on the electrotherapy of pain by Delhern, on psychotherapy by Cadet, and on balneotherapy and climatotherapy by Villaret.

Diseases of the Heart. By John Cowan, B.A., M.D., D.Sc., Consulting Physician, Royal Infirmary, Glasgow, and W. T. Ritchie, O.B.E., M.D., F.R.C.P.E., Professor of Medicine and of Clinical Medicine, Edinburgh University. With a chapter on The Ocular Manifestations of Arterial Disease by Arthur J. Ballantyne, M.D., F.R.F.P.S., Lecturer on Ophthalmology, University of Glasgow. Third edition. Cloth. Price, $9. Pp. 631, with 335 illustrations. Baltimore: William Wood & Company, 1935.

In 1914 Cowan published his work on the heart. The second edition with Ritchie as co-author appeared twelve years later. These volumes received and deserved commendation. They were popular as textbooks for undergraduates and were useful to practitioners. The third edition merits the success of its predecessors. The many advances in knowledge of heart disease of the last twenty or even twelve years have necessitated much revision and much in the way of addition. The arrhythmias, the electrocardiogram, bacterial endocarditis, coronary thrombosis and angina pectoris are some of the topics that have been expanded and brought down to the present. Anatomy and pathology are adequately discussed. Mention should be made of the excellent character of the illustrations, nearly all of which are original. There is a helpful chapter by Arthur J. Ballantyne on the ocular manifestations of arterial disease. Fortunately the authors in their enthusiasm over the x-rays and the electrocardiograph have not forgotten the stethoscope and percussion. Valvular diseases are still deemed worthy of consideration, the murmurs are diagramed and physical diagnosis not slurred over as out of date. The book is one that may be warmly recommended to the practitioner or undergraduate as scientific, practical and trustworthy.

Traité de pathologie médicale et de thérapeutique appliquée. Publié sous la direction de Émile Sergent, professeur de clinique médicale propédeutique, L. Ribadeau-Dumas, médecin de la Salpêtrière, et L. Babonneix, médecin de St.-Louis. Tome XXXII: Radiologie. Fascicule 2: Radiothérapie: rayons x—radium. Par Paul Cottenot, médecin électroradiologiste de l'Hôpital Broussais, et Simone Laborde, chef du service de curiethérapie à l'Institut du Cancer. Second edition. Paper. Price, 70 francs. Pp. 514, with 80 illustrations. Paris: Norbert Maloine, 1934.

Students and practitioners of radiotherapy will find in this volume a satisfactory and scientifically accurate description of the physical properties of the x-rays and the armamentarium and technical information necessary for their application to the treatment of disease. A section of the book concerns the physical properties of radioactive substances and the instrumentation and technical details of application of curie therapy. A third section deals with the biologic action of roentgen rays and the radiations from other radioactive substances, their effects on normal and pathologic tissues, and their application to various pathologic states. The latter are classified according to systems, in the classic manner. More than a hundred pages, or one fifth of the book, is devoted to the treatment of malignant disease. A chapter on protection for patient and operation concludes. The details and methods concerning the various lesions are in keeping with methods generally accepted, but much is included that belongs to the history of the past and has been discarded in the practice of today.

The units of measurement of x-ray dosage are discussed and compared. Many American readers of abstracts of French articles on radiotherapy do not appreciate that the French unit R has a smaller value than the international unit r. The R devised by Solomon represents the quantity of x-radiation that liberates by ionization in a small ionization chamber the same quantity of electricity that is liberated in a second in the same chamber by a gram of radium placed 2 cm. from the axis of this little chamber, the radium rays being filtered through 0.5 mm. of platinum. The international unit r adopted by the International Congress of Radiology in Stockholm in 1928 is equal in value to 2.2 R (Solomon).

The work is a practical handbook of current knowledge up to within a fairly recent date. The practice is also that currently approved in most of the larger hospitals.

Know Thyself: A Study in Mental Qualities. By John Potts, M.D., D.C.L. Cloth. Price, $3. Pp. 267. Philadelphia: Dorrance & Company, Inc., 1935.

This seems to be an effort to make every one into a psychologist. The author promulgates a hundred rules for evaluating the minds of those with whom the reader may come in contact. He seems distressed by the prevalent human tendency toward wishful thinking and toward making excuses for failures. He divides minds, apparently to his own complete satisfaction, into three groups: superior, mediocre and inferior. The ideas expressed in 250 pages of tedious and repetitious platitudes could readily have been condensed to one-third the verbiage. One cannot escape the impression that any one who takes the book seriously and goes about applying the hundred rules to his friends will soon become an insufferable intellectual snob. Despite the obvious sincerity of the author and the presence in the book of much useful information, the work can scarcely be recommended as a significant contribution to the popular literature on mental hygiene.

Clinical Science Illustrated by Personal Experiences. By Sir Thomas Lewis, C.B.E., F.R.S., M.D., Physician in Charge of Department of Clinical Research, University College Hospital, London. Department of Clinical Research, University College Hospital, London. Cloth. Price, 12s. Pp. 189, with 49 illustrations. London: Shaw & Sons, Ltd., 1934.

Sir Thomas Lewis is generally looked on as a laboratory worker. That he has also been in touch with the patient is shown by his early publications, Clinical Disorders of the Heart Beat and Clinical Electrocardiography. His later volume on Diseases of the Heart is further evidence that the author of Mechanism and Graphic Registration of the Heart Beat is interested in clinical medicine as well as in laboratory research. Of late Sir Thomas has been emphasizing the need of scientific investigation in hospitals of problems presented by phenomena of disease that are not yet clearly understood. This work demands concentrated study on the part of men who are not alone practitioners but who are also trained in the technic and imbued with the scientific habits of thought of the laboratory worker. This volume has as its major motive the stimulation of competent men to work of this character. The scope and methods of this "clinical science" are considered in the first chapter of the book. This chapter may be regarded as a sermon based on the text presented by the original observations and experiments described in the remaining chapters. These chapters—the same is true of the first one—consist largely of articles previously published. They are more than reprints, however; they are rewritten, often condensed, and stripped of distracting references to authorities or to conflicting theories. Among the topics considered are auricular fibrillation, auricular flutter, capillary pulsation, axon reflexes in man, muscular pain in intermittent claudication, anginal pain and Raynaud's disease. It is surely a cause for congratulation that workers in medicine may have these articles brought together in such convenient form, revised and edited by Sir Thomas himself. The practitioner too, though he may not plan to be an investigator in "clinical science," will enjoy and profit by the reading of this volume, for it is needless to add that when Sir Thomas Lewis writes he has something to say and that he says it forcefully, concisely and clearly.

Common Sense for Mothers on Bringing up Your Children from Babyhood to Adolescence. By Mrs. John S. Reilly. With an Introduction by Charles Gilmore Kerley, M.D. Cloth. Price, $2. Pp. 380, with illustrations. New York & London: Funk & Wagnalls Company, 1935.

This book is divided into five parts: a discussion of babies, toddlers, school age children, adolescent boys and girls, and some common sense suggestions for mothers. The many problems that arise in caring for children are discussed in a personal, friendly manner. The author believes that the mother should have a dominant position in the home in the training of the children. She discusses the everyday problems, familiar to all mothers, emphasizing especially feeding, sleeping, clothing, preschool difficulties and the modern problems of the adolescent boy and girl. She asserts that there should be close

association between the parents and the children, and points out that the rewards in motherhood are many. The section relating to the school age and adolescence are unique and will aid parents in solving many of the perplexing questions that arise at this time of the child's life. The book will be found valuable to all parents.

Experimental Studies on Cancer. I. The Influence of the Parenteral Administration of Certain Sugars on the *pH* of Malignant Tumors. By Carl Voegtlin, R. H. Fitch, Herbert Kahler, J. M. Johnson and J. W. Thompson. II. The Estimation of the Hydrogen Ion Concentration of Tissues in Living Animals by Means of the Capillary Glass Electrode. By Carl Voegtlin, Herbert Kahler and R. H. Fitch. III. The Influence of Hydrogen Ion Concentration upon the Reversal of Proteolysis in Oxygenated Extracts of Normal and Neoplastic Tissues. By Mary E. Maver, J. M. Johnson and Carl Voegtlin. IV. A Comparison of the Growth of the Jensen Rat Sarcoma in Subcutaneous and Intramuscular Transplants. By W. R. Earle and Carl Voegtlin. Prepared by direction of the Surgeon General. U. S. Treasury Department, Public Health Service. National Institute of Health Bulletin No. 164, January 1935. Paper. Price, 10 cents. Pp. 58, with 8 illustrations. Washington, D. C.: Supt. of Doc., Government Printing Office, 1935.

This pamphlet contains four articles on the results of studies on various problems relating to cancer.

Medicolegal

Dental Practice Acts: Statutory Restrictions on Advertising Upheld; Regulatory Power of Board.—The Modern System Dentists, Inc., the New System Dentists, Inc., and the Parks Painless Dentists, Inc., apparently engaged in the practice of dentistry in Wisconsin, sought to restrain the Wisconsin board of dental examiners from enforcing certain rules adopted by the board with reference to dental advertising. The trial court sustained a demurrer interposed by the board, and the plaintiffs appealed to the Supreme Court of Wisconsin.

The dental practice act of Wisconsin provides that the term "unprofessional advertising," as used in the act, shall include: (1) advertisements containing untruthful, impossible, deceptive or misleading statements; (2) the advertising of professional superiority; (3) the advertising of fixed prices "when the nature of the service rendered and material furnished must be variable," and (4) advertising by means of large, display, glaring, illuminated or flickering light signs or signs which contain the representation of a tooth, bridge work or any portion of the human head. The act authorizes, furthermore, the board of dental examiners to adopt reasonable regulations pertaining to unprofessional advertising as defined in the act.

The statutory restrictions on advertising were upheld, the court basing its holding on the reasoning of the Supreme Court of Oregon in *Semler* v. *Oregon State Board of Dental Examiners*, 34 P. (2d) 311 (55 Sup. Ct. 570) abstracted in THE JOURNAL, June 1, page 2025, in which case the constitutionality of similar statutory provisions in the Oregon dental practice act was upheld. The Wisconsin act, said the Supreme Court of Wisconsin, does not deprive the plaintiffs of property without due process of law. If their practices are in the judgment of the legislature detrimental to the health, morals and welfare of the state, their activities may be restrained in the manner attempted by the dental practice act.

The board, purportedly acting under statutory authority, promulgated certain rules relative to advertising which the plaintiffs contended were invalid. The board declared that the following form of advertising tended to deceive or mislead the public, within the meaning of the act:

(a) The advertising of particular services or appliances at a price "From $—— Dollars up" or wording to that effect. . . .

(d) Signs of dentists used in any other place except on the premises of the building in which the office is located. . . .

Another rule promulgated by the board provided:

Rule 5. It is the opinion of the Board that the nature of professional services rendered and materials required vary in each instant case and that the advertising of any fixed price for any particular operation or work is in violation of 152.06 (6) (c) which provides "Advertising definite, fixed prices when the nature of the professional services rendered and the materials required must be variable."

The legislature, in the opinion of the court, having defined "unprofessional advertising," the power of the board was limited in that respect to a ruling as to what does and does not come within the statute and to amplifying and defining the terms used therein. The board ruling providing that advertising particular services or appliances at a price "From $—— Dollars up" tends to deceive or mislead the public was held to be clearly within the power of the board to adopt. On the other hand, the board had no authority to adopt the rule prohibiting the use of a sign in any place other than on the premises of the building in which the dentist's office is located, because, while the dental practice act restricts the contents of signs, it is silent concerning the place where the sign may properly be placed, whether on an office door, wall, billboard or in a newspaper. The validity of the rule providing that the nature of professional services is such that *all* dental services rendered and materials furnished are variable was upheld. This involved, in the opinion of the court, a matter of expert knowledge about which the members of the dental board were much better informed than any one outside the profession could possibly be. It may be argued, said the court, that from the language of the statute itself it follows as a necessary implication that there are some services and some materials which are not variable. That is a matter, however, on which the legislature had no more information than other laymen and they quite clearly left it to the board of dental examiners to determine that matter as a question of fact. Likewise, a rule relating to the size of advertisements and the maximum size of letters to be used thereon was upheld.

Since some of the regulations adopted by the board were not authorized under the dental practice act, the Supreme Court held that the complaint stated a good cause of action and that the trial court erred in sustaining the demurrer interposed by the defendant board. The case was therefore remanded to the trial court with directions to overrule the demurrer.—*Modern System Dentists, Inc., et al. v. State Board of Dental Examiners of Wisconsin (Wis.), 256 N. W. 922.*

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, Cincinnati, Sept. 14-20. Dr. William P. Wherry, 107 South 17th Street, Omaha, Executive Secretary.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Sky Top, Pa., Sept. 16-18. Dr. James R. Bloss, 418 Eleventh Street, Huntington, W. Va., Acting Secretary.

American Congress of Physical Therapy, Kansas City, Mo., Sept. 9-12. Dr. Nathan H. Polmer, 921 Canal Street, New Orleans, Secretary.

American Hospital Association, St. Louis, Sept. 30-Oct. 4. Dr. Bert W. Caldwell, 18 East Division Street, Chicago, Executive Secretary.

American Public Health Association, Milwaukee, Oct. 7-10. Dr. Reginald M. Atwater, 50 West 50th Street, New York, Executive Secretary.

American Roentgen Ray Society, Atlantic City, N. J., Sept. 24-27. Dr. E. P. Pendergrass, 3400 Spruce Street, Philadelphia, Secretary.

Association of Military Surgeons of the United States, New York, Oct. 3-5. Dr. H. L. Gilchrist, Army Medical Museum, Washington, D. C., Secretary.

Colorado State Medical Society, Estes Park, September 5-7. Mr. Harvey T. Sethman, 537 Republic Building, Denver, Executive Secretary.

Delaware, Medical Society of, Wilmington, Oct. 8-9. Dr. William H. Speer, 917 Washington Street, Wilmington, Secretary.

Indiana State Medical Association, Gary, Oct. 8-10. Mr. T. A. Hendricks, 23 East Ohio Street, Indianapolis, Executive Secretary.

Kansas City Southwest Clinical Society, Kansas City, Mo., Oct. 7-10. Dr. Ralph R. Coffey, 1103 Grand Avenue, Kansas City, Mo., Secretary.

Kentucky State Medical Association, Louisville, Sept. 30-Oct.3. Dr. A. T. McCormack, 532 West Main Street, Louisville, Secretary.

Michigan State Medical Society, Sault Ste. Marie, Sept. 23-25. Dr. Burton R. Corbus, 313 Metz Building, Grand Rapids, Acting Secretary.

Mississippi Valley Conference on Tuberculosis, Madison, Wis., Sept. 12-14. Mr. A. W. Jones, 613 Locust Street, St. Louis, Secretary.

Ohio State Medical Association, Cincinnati, Oct. 2-4. Mr. C. S. Nelson, Hartman Theatre Building, Columbus, Acting Secretary.

Oregon State Medical Society, Gearhart, Sept. 19-21. Dr. Blair Holcomb, Stevens Building, Portland, Secretary.

Pennsylvania, Medical Society of the State of, Harrisburg, Sept. 30-Oct. 3. Dr. Walter F. Donaldson, 500 Penn Avenue, Pittsburgh, Secretary.

Southern Minnesota Medical Association, Austin, Aug. 25-26. Dr. Harold C. Habein, 102 Second Avenue S.W., Rochester, Secretary.

Utah State Medical Association, Logan, September 5-7. Dr. George N. Curtis, Judge Building, Salt Lake City, Secretary.

Wisconsin, State Medical Society of, Milwaukee, Sept. 17-20. Mr. J. G. Crownhart, 119 East Washington Avenue, Madison, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

10: 567-704 (June) 1935

Coronary Arteriosclerosis, Coronary Thrombosis and Resulting Myocardial Changes: Evaluation of Their Respective Clinical Pictures Including Electrocardiographic Records, Based on Anatomic Findings. O. Saphir, W. S. Priest, W. W. Hamburger and L. N. Katz, Chicago.—p. 567.

Treatment of Angina Pectoris and Congestive Failure by Total Ablation of Normal Thyroid: XIV. Results in Arteriosclerotic Heart Disease. H. L. Blumgart, J. E. F. Riseman, D. Davis and A. A. Weinstein, Boston.—p. 596.

Effect of Position of Heart on Electrocardiogram: I. Electrocardiogram in Revived Perfused Human Hearts in Normal Position. W. B. Kountz, M. Prinzmetal, E. F. Pearson and K. F. Koenig, St. Louis.—p. 605.

Id.: II. Observations on Electrocardiogram Obtained from Dog's Heart Placed in Human Pericardial Cavity. W. B. Kountz, M. Prinzmetal and J. R. Smith, St. Louis.—p. 614.

Effect of Position of Heart on Electrocardiogram: III. Observations on Electrocardiogram in Monkey. W. B. Kountz, M. Prinzmetal and J. R. Smith, St. Louis.—p. 623.

Course of Rheumatic Heart Disease in Adults: III. Influence of Auricular Fibrillation on Course of Rheumatic Heart Disease. A. C. DeGraff and Claire Lingg, New York.—p. 630.

*Interrelationship of Arteriosclerotic Heart Disease and Chronic Congestive Failure. G. Nemet and H. Gross, New York.—p. 643.

Value of Sound Records in Diagnosis of Mitral Stenosis. F. D. Johnston, Ann Arbor, Mich.—p. 654.

Occlusive Diseases of Coronary Arteries: Analysis of Pathologic Anatomy in One Hundred and Sixty-Eight Cases, with Electrocardiographic Correlation in Thirty-Six of These. E. Appelbaum and Gertrude H. B. Nicolson, New York.—p. 662.

Delay in Onset of Ejection of Left Ventricle in Bundle-Branch Block. L. N. Katz, H. Landt and A. Bohning, Chicago.—p. 681.

*New and Simple Method of Avoiding High Resistance and Overshooting in Taking Standardized Electrocardiograms. J. L. Jenks Jr., Cambridge, Mass., and A. Graybiel, Boston.—p. 693.

Arteriosclerotic Heart Disease and Chronic Congestive Failure.—Nemet and Gross studied the factors that are responsible for the development of chronic congestive failure in chronic coronary disease and myocardial fibrosis. The clinical and postmortem records of 100 unselected cases were studied. The majority were in, or gave a history of, congestive failure. Varying degrees of vascular and myocardial damage were common to the entire series, but the majority of patients with congestive failure had definite and in most instances advanced cardiac hypertrophy. There were but three exceptions to this rule. The group not in failure had nonhypertrophied or, in a few cases, slightly hypertrophied hearts. The characteristic feature of the chronic congestive phase of chronic coronary artery disease is the presence of cardiac hypertrophy. Increased initial fiber tension rather than increased work is the stimulus for generalized cardiac hypertrophy. Contraction with increased initial tension compensates for inadequate contractility. Myocardial disease by diminishing contractile power calls forth increased initial fiber tension and may, according to the theory, be the cause of generalized cardiac hypertrophy. The application of this concept is not sufficiently supported, however, by clinical experience. The data in the literature are contradictory on this point. The authors' opinion is that in the majority of cases generalized and advanced cardiac hypertrophy is caused by hypertension, present or antecedent, and not by vascular and myocardial damage. Diminished blood supply and severe muscle damage produce loss of contractility and may cause failure without leading to fiber hypertrophy. The striking predominance of hypertrophied hearts of the group in failure, however, indicates that it is work under long standing increased fiber tension, irrespective of the cause, and the eventual loss of contractile power of the hypertrophied fiber that lead to chronic congestive failure. Congestive failure in chronic arteriosclerotic heart disease is—like that of other types of heart disease—overwhelmingly the failure of the hypertrophied heart.

Method of Taking Electrocardiograms.—To avoid distortion in taking standardized electrocardiograms it seems to Jenks and Graybiel necessary to provide an electrode which will not polarize even in the presence of moderately high skin resistance, or to adjust the damping of the string to prevent in part the overshooting or to reduce the skin resistance to consistently low values. Experiments were made with a view toward lowering sufficiently the natural impedance to electric currents found in the skin, thus permitting the use of a high frequency string of low resistance. By this procedure there would also be the added advantage of minimizing the effects of outside vibration. During the course of experimentation a combination of substances which gave unexpectedly good results was discovered, and it was found possible to include the requisite substances in the form of a paste. By the use of this paste, patients from whom it was previously impossible to obtain satisfactory electrocardiograms now yielded complexes of correct form and amplitude. Although the chief purpose of the paste is to reduce skin resistance, it was also found to form an excellent nonpolarizing contact between the skin and the electrode. The mixture contains 6½ pounds of sodium chloride, 8 pounds of pumice (powder), 8 ounces of gum tragacanth, 4 ounces of potassium bitartrate, 24 ounces of glycerin, 1 ounce of phenol (carbolic acid) and 2 gallons of water. The gum tragacanth and glycerin are heated in half the volume of water for six hours. The potassium bitartrate and sodium chloride are dissolved in the remaining volume of water and added. The resulting mixture is stirred thoroughly with an electric mixer and heated again for an hour. The phenol and pumice are now added, together with more water if necessary, and the whole mixture is again mixed until it is of a creamy consistency. In actual use a small quantity of the paste is rubbed briskly on the desired skin area, a small surplus being left to facilitate contact with the electrode. The electrode, a german silver plate measuring about 5 by 8 cm., is firmly applied over this area and held by means of an elastic ribbon or band. Within reasonable limits, the size of the electrode is immaterial so far as the resistance of the skin and polarization of the electrode are concerned. Resistance measured on the electrocardiograph, using the electrodes and paste described, is in most cases about 1,000 ohms and rarely as high as 2,000 ohms. This applies equally to myxedematous, cachectic or Negro patients, from whom it is sometimes difficult or impossible to obtain satisfactory tracings. Electrocardiographic tests made on about 400 patients showed uniform results, with resistances of from 1,000 to 2,000 ohms and no overshooting.

American Journal of Diseases of Children, Chicago

49: 1399-1692 (June) 1935

Constitutional Inferiority in Infancy. A. S. Sokolow, Moscow, U. S. S. R.—p. 1399.

Beta Hemolytic Streptococcic Infection in Infancy and in Childhood: I. Antifibrinolysin and Antistreptolysin Response. V. W. Lippard and Priscilla Johnson, New York.—p. 1411.

Id.: II. Effect of Transfused Blood and of Streptococcic Antiserum on Concentrations of Antifibrinolysin and Antistreptolysin in Blood of Recipients. V. W. Lippard and Priscilla Johnson, New York.—p. 1430.

Morphologic Flora of Nose, Throat, Stools and Urine of Patients with Poliomyelitis. J. A. Toomey, Cleveland.—p. 1438.

*Treatment of Infantile Scurvy with Cevitamic Acid. Elvira Goettsch, New York.—p. 1441.

*Clinical Manifestations of Calcium Deficiency in Infancy and in Childhood. H. T. Nesbit, Dallas, Texas.—p. 1449.

Roentgen Therapy for Acute Cervical Adenitis. S. G. Schenck, Brooklyn.—p. 1472.

Prognosis of Nephrotic Syndrome in Children: Clinical Study. Vivian Tappan, Tucson, Ariz.—p. 1487.

Dosage of Camphorated Tincture of Opium and Morphine for Infants. H. E. Irish, Chicago.—p. 1503.

*Allergic Eczema: Eczema Initiated by Sensitization to Foods. J. G. Hopkins and B. M. Kesten, New York.—p. 1511.

Pathologic Changes in Asthmatic Infants. G. L. Waldbott, Detroit.—p. 1531.

Treatment of Scurvy with Cevitamic Acid.—Goettsch gave cevitamic acid intravenously to four infants having severe scurvy long enough for comparison with control patients receiving orange juice. Calcium was deposited in subperiosteal

hematomas on the second, third, fourth and fifth days, respectively, while in the control infants who received orange juice calcification was not noted until the eighth, tenth and eleventh days. Initial roentgenograms taken before therapy was instituted in six cases showed no evidence of subperiosteal hemorrhages of the long bones, while in the remaining two slight calcification of such hematomas could be seen. The clinical condition of the latter infants prevented further maintenance in the hospital on a scorbutic diet to corroborate the histories obtained on admission. In each case the diet consisted of boiled milk only, and no specific antiscorbutic substance had been added for at least one month prior to admission. In one patient initial roentgenograms revealed definite calcification of small subperiosteal hemorrhages of the lower extremities, but none in the upper extremities. Four days after cevitamic acid had been given an extremely large subperiosteal hematoma of the left humerus was outlined by newly deposited calcium, while only a slight increase in density had occurred in the hematomas of the lower extremities. The spectacular increase of density in the hemorrhage cloaking the humerus was never matched by similar changes in the hematomas of the tibias. From the point of view of relief of subjective symptoms, treatment with cevitamic acid resulted in satisfactory clinical improvement and was at least as effective as treatment with orange juice. In three babies who received cevitamic acid, pain was apparently relieved more quickly than in the controls. In no infant was pain relieved immediately, even when the massive dose of 400 mg. of cevitamic acid was given intravenously. No untoward reaction followed intravenous therapy, in spite of the fact that the acid was not neutralized before injection. The tourniquet test was not found reliable as a measure of healing of the scorbutic process in infants.

Calcium Deficiency in Childhood. — Nesbit describes a syndrome of increased neuromuscular irritability and functional imbalance occurring in infancy, which is strikingly relieved by measures that improve the absorption of calcium. Thirty-six cases illustrate the relation of the syndrome to convulsions and functional disturbances occurring in later childhood. These cases portray a symptom complex manifested (1) in early infancy by hypertonia, restlessness, excessive crying, retraction of the head, irregular respirations, bronchiospasm, enterospasm, pyloric spasm, convulsions and spells of cyanosis; (2) in the runabout period by sleeplessness, extreme restlessness, syncope and convulsions, and (3) in the school period by hypertonicity, emotional instability and incorrigibility, together with other symptoms of increased neuromuscular irritability and chorea. The frequqency of emotional upsets, excessive apprehensiveness, sleeplessness and tremor in the mothers of children having these symptoms has been demonstrated. The prompt relief afforded by calcium therapy in each of the instances cited encourages one to attribute the underlying cause to some error in mineral metabolism.

Allergic Eczema.—Among about 400 cases of eczematous eruption studied in the allergy division of the dermatologic clinic in the last six years, Hopkins and Kesten were able to find seventy-five in which the evidence seemed definite that food was either the sole cause or a contributing cause of the dermatosis. Food was the sole cause in two thirds and a contributing cause in one third of the cases. More than two thirds of the patients were children. The most striking clinical characteristic of food eczema is the distribution of the eruption. The similarity is remarkable among patients in each age group. Equally striking are the changes both in distribution and in character that mark the progress of the disease. Patients with food eczema often present other symptoms of food allergy and of allergy to other substances, the frequency of which is shown. In forty patients there was a history of allergic disorders among the patient's relatives. There was no special frequency of eczema as compared with asthma and hay fever. The occurrence of allergic conditions in the families of these patients was frequent enough to indicate that hereditary factors are important. Whether there is a unit character that makes sensitization possible or impossible seems doubtful, but at least one can say that many of these patients come of a stock which shows an unusual tendency to become sensitized. In determining whether foods are responsible and, if so, what foods, skin tests are of value, and intradermal tests seem more helpful than percutaneous tests. Elimination diets as devised by Rowe are the most useful means for the clinical determination of sensitivity to food. Symptomatic treatment, though often helpful, has been avoided as far as possible in this series in order to observe more accurately the influence of diet. In cases in which eczema is due solely to sensitization to a few unimportant foods their exclusion is the only treatment required, but for patients sensitive to one or more basic foods desensitization seems the only solution. The most practical method is that of Schofield and Schloss, by which there is a daily feeding of gradually increased amounts beginning with minute doses. Attempts to desensitize patients by ingestion of the "specific propeptan tablets" have been disappointing. The occurrence in these patients of other allergic symptoms, such as gastrointestinal reactions, urticaria, asthma, hay fever and migraine, indicates that the eczema is only one manifestation of the familial type of allergy. As this dermatosis is an expression of the familial type of allergy, a convenient designation for it is allergic eczema.

American Journal of Physiology, Baltimore

112: 227-404 (June) 1935

Response of Hyperthyroid Heart to Epinephrine. C. H. McDonald, W. L. Shepeard, M. F. Green and A. F. DeGroat, Little Rock, Ark. —p. 227.
Study in Reflexes: Identification of Cutaneous Afferent Fibers Which Evoke Ipsilateral Extensor and Flexor Reflexes. A. S. Harris, St. Louis.—p. 231.
Effect of Total Thyroidectomy on Experimental Diabetes Insipidus in Dogs. W. Mahoney and D. Sheehan, New Haven, Conn.—p. 250.
Effects of Magnesium Deficiency on Teeth and Their Supporting Structures in Rats. H. Klein, Elsa R. Orent and E. V. McCollum, Baltimore.—p. 256.
Growth and Glycogen Content of Fetal Liver and Placenta. E. L. Corey, Charlottesville, Va.—p. 263.
Comparative Study of Sympathin and Adrenine. W. B. Cannon and A. Rosenblueth, Boston.—p. 268.
Equation of Voltage Capacity Curve for Excitation of Sciatic Nerve of Rana Pipiens. H. A. Blair, Rochester, N. Y.—p. 277.
Effect of Diet Poor in Salts on Growth and Composition of Incisors of Rat. Miriam F. Clarke and A. H. Smith, New Haven, Conn.—p. 286.
Utilization of Carbohydrate During Aerobic Activity in Isolated Frogs' Muscle. C. L. Gemmill, Baltimore.—p. 294.
Evidences of an Altered Tissue State in Ventricular Fibrillation. N. D. Kehar and D. R. Hooker, Baltimore.—p. 301.
*Weight Loss Changes During Muscular Work Following Food Ingestion. C. I. Hovland, New Haven, Conn.—p. 307.
Rôle of Hypophysis in Experimental Chronic Adrenal Insufficiency. A. Grollman and W. M. Firor, Baltimore.—p. 310.
Effect of Initial Tension on Spontaneous Activity and Responses of Nonpregnant Cat's Uterus. F. A. Simeone, Boston.—p. 320.
Alimentary Motor Conditioning and Pitch Discrimination in Dogs. S. Dworkin, Montreal.—p. 323.
Electrical Stimulation of Interior of Cerebellum in Monkey. H. W. Magoun, W. K. Hare and S. W. Ranson, Chicago.—p. 329.
*Quantitative Determination of Urinary Estrin. G. V. S. Smith and O. W. Smith, Brookline, Mass.—p. 340.
Effect of Coronary Occlusion on Myocardial Contraction. R. Tennant and C. J. Wiggers, Cleveland.—p. 351.
Phasic Variations in Peripheral Coronary Resistance and Their Determinants. D. E. Gregg, H. D. Green and C. J. Wiggers, Cleveland. —p. 362.
So-Called Normal Alcohol of the Body. R. N. Harger and Anna L. Goss, Indianapolis.—p. 374.
Rates of Resorption in the Gallbladder: Further Experiments with Methylene Blue on Rabbits. B. Halpert, P. A. O'Connor and W. R. Thompson, New Haven, Conn.—p. 383.
Water and Chloride Excretion of Decerebrate Cats. Margaret Sumwalt, W. H. Erb and H. C. Bazett, Philadelphia.—p. 386.
Studies on Water Metabolism in Normal and Hypophysectomized Frogs. Mildred E. Jones and F. R. Steggerda, Urbana, Ill.—p. 397.
Permeability of Frog Capillaries to Protein. Ruth E. Conklin, Poughkeepsie, N. Y.—p. 401.

Loss of Weight During Muscular Work.—Hovland recorded the loss of weight during relaxation and during the performance of finger oscillation following the ingestion of large and small meals. Ten subjects were used four days each. Efficiency, judged by the increment of loss of weight during work as compared to the loss during relaxation, appears better after a light lunch, the advantage being greatest in the earlier part of the afternoon, immediately after eating. Maximal inefficiency, from the standpoint of the expenditure of energy, is found in the late afternoon, about four hours after eating.

Quantitative Determination of Urinary Estrogenic Substance.—The Smiths conducted a series of comparative analyses which demonstrated that chloroform, olive oil, ethyl

acetate and benzene could not be counted on to give complete recovery or quantitatively comparable percentages of estrogenic substance as it occurs in untreated pregnancy urines. Chloroform gave the lowest and benzene the highest values. Recovery experiments, employing twenty-four hour continuous extraction with benzene, revealed that assays on untreated pregnancy urines could not be used as a gage of the amount of estrogenic material actually present, since in some cases more was recovered than had been demonstrable in the unextracted specimens. Pregnancy urines, after being boiled for from five to ten minutes with 15 per cent of their volume of concentrated hydrochloric acid, increased greatly in their estrogenic content. There was, however, no constant ratio between the amount found in the untreated specimens and the amount "freed" by acid treatment. The ratios varied between 1:1.5 and 1:40. When the concentration of acid and the time of boiling were varied, no greater increase in potency could be produced by changing the technic within certain limits and no destruction of "freed" hormone resulted from boiling for ten minutes with 15 per cent acid. This procedure, therefore, was adopted and the estrogenic substance so recovered was called "total." In assays on the pure hydroxyketone, theelin, it appeared that on long standing in the slightly alkaline solution in which it is put up, theelin was bound, since when first diluted for injection the potency was considerably less than could be demonstrated after the diluted solution had stood for ten days or more. Acid treatment did not result in any further increase in its estrogenic activity. Acid treatment simply "freed" the theelin that was originally present. No relation between the p_H of urine specimens and the amount of free estrogenic substance could be established, but it seems probable that the amount of the material "free" at any one time in any one specimen depends on variations in the other urinary constituents. From repeated analyses over a period of one month on the fresh, slightly acid urines of a pregnant woman the values for "free" estrogenic substance were strikingly inconsistent from day to day, but the "total" estrogenic substance followed a uniform curve, rising steadily as the pregnancy advanced. The actual ratios of "free" to "total" substance varied between 1:5 and 0:30. The results on single specimens from twelve nonpregnant subjects showed ratios of "free" to "total" material varying from 1:1 to 1:35 +.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

33: 733-860 (June) 1935

*Roentgenologic Diagnosis of Tumors in Sellar Region. B. H. Nichols, Cleveland.—p. 733.

*Enlargement of Defect in Air Shadow Normally Produced by Choroid Plexus: Its Occurrence After Ventricular Puncture. C. G. Dyke, C. A. Elsberg and L. M. Davidoff, New York.—p. 736.

Reliability of Brain Tumor Localization by Roentgen Methods. F. J. Hodges and V. C. Johnson, Ann Arbor, Mich.—p. 744.

Responsibility of Roentgenologist in Detection of Intracranial Tumors. K. Kornblum, Philadelphia.—p. 752.

Suppuration in Pneumatic Petrous Apex. H. K. Taylor, New York.—p. 767.

Bronchiolectatic Emphysema of Adults. H. H. Cherry, Paterson, N. J.—p. 774.

Veiled Air Bubble in Hydropneumothorax. E. Korol and H. A. Scott, Lincoln, Neb.—p. 777.

The Reexpanded Lung. P. Dufault, Rutland, Mass.—p. 781.

Dangers of Roentgenoscopy and Methods of Protection Against Them: V. Some Considerations of "Dose" Received During Examination of Colon. E. I. L. Cilley, E. T. Leddy and B. R. Kirklin, Rochester, Minn.—p. 787.

Considerations Relative to Evaluation of Ultraviolet Radiation in Absolute Units. W. W. Coblentz, Washington, D. C.—p. 793.

Benign Lesions of the Eye, Ear, Nose and Throat. G. A. Robinson, New York.—p. 801.

Treatment of Chronic Infection of Parotid Gland. G. M. Dorrance, Philadelphia.—p. 803.

Deep Roentgen Therapy of Carcinoma of Bladder and Prostate. A. T. Nisbet, Sydney, Australia.—p. 807.

Results of Radium Therapy in Benign Conditions of Uterus. J. A. Corscaden, New York.—p. 810.

Benign Uterine Hemorrhage, with Especial Consideration of Radiation Therapy. H. Schmitz, Chicago.—p. 819.

Hazards in Use of Radium in Cancer. M. J. Sittenfield, New York.—p. 825.

Tumor Classification for Diagnostic Radiotherapy. J. Gershon-Cohen, Philadelphia.—p. 829.

Roentgenologic Diagnosis of Tumors in Sellar Region.—In reviewing twenty-four cases of tumor in or near the sella, twelve intrasellar lesions and twelve suprasellar lesions, Nichols discusses the roentgenologic criteria observed in roentgenograms of the sellar region and in encephalograms made following the injection of air. The signs on the roentgenogram indicative of pathologic changes in or near the sella include decalcification and erosion of the clinoid processes, calcification, and elevation or depression of either the roof or the floor of the sella. When these definite roentgenographic signs are absent, encephalography is employed. This method is most valuable in the case of a suprasellar tumor that may be visualized directly or may be producing a deformity of the ventricles or of the basilar cisterns. Encephalography is seldom necessary in making a diagnosis of intrasellar tumor, which usually produces sufficient calcification or deformity to make possible the diagnosis from the roentgenogram.

Air Shadow Normally Produced by Choroid Plexus.—Dyke and his associates point out that during puncture of the ventricles in the posterior parietal region for the introduction of air, as ordinarily done, the brain cannula may accidentally come into contact with and traumatize the glomus of the choroid plexus or a vessel in the wall of the ventricle. This may produce a hematoma or edema of the choroid plexus or the ventricular wall, which can be recognized on the roentgenogram as a defect in the outline of the lower wall of the lateral ventricle situated in or near the position of the glomus. In the authors' cases the location of the abnormally large defect corresponded to the glomus of the choroid plexus. The defect occurred only after ventriculography and was on the side of the ventricular puncture when a single puncture was done. At subsequent encephalography the defect was definitely decreased in size. The disease from which the patient was suffering was in each case unrelated to the defect in the ventricle. A defect of large size was never observed in the routine examination of the roentgenograms taken in 1,400 cases in which air was injected only by the lumbar route. A hematoma in the ventricle near the position of the glomus following ventricular puncture was demonstrable in a case at postmortem examination.

Anatomical Record, Philadelphia

62: 213-330 (June 25) 1935. Partial Index

Effect of Antuitrin S on Male Lizard, Anolis Carolinensis. L. T. Evans, Boston.—p. 213.

Effect of Estrin and Male Hormone Injected Separately and Simultaneously on Smooth Muscle and Epithelium of Seminal Vesicle in Albino Rat. M. D. Overholser and W. O. Nelson, Columbia, Mo.—p. 247.

Some Structural and Functional Features of Rabbits' Uteri Following Prolonged Estrin Administration. S. R. M. Reynolds, Brooklyn.—p. 269.

Variations of Middle Meningeal Artery Within Middle Cranial Fossa. S. B. Chandler and C. F. Derezinski, Chicago.—p. 309.

Annals of Internal Medicine, Lancaster, Pa.

8: 1575-1730 (June) 1935

Marrow Insufficiency. W. S. Middleton and O. O. Meyer, Madison, Wis.—p. 1575.

*III. Metabolic Aspect of Associated Diabetes Mellitus and Pulmonary Tuberculosis. R. M. McKean and G. B. Myers, Detroit.—p. 1591.

Erythremia. L. F. Bishop, L. F. Bishop Jr. and M. Trubek, New York.—p. 1602.

Treatment of Lobar Pneumonia by Artificial Pneumothorax: Study of Twenty-Five Cases. H. F. Stoll, Hartford, Conn.; H. P. Hopkins, Chatham, Mass., and J. C. Martin, West Hartford, Conn.—p. 1611.

Occurrence of Coronary Air Embolism in Artificial Pneumothorax. T. M. Durant, Ann Arbor, Mich.—p. 1625.

*Shock Syndrome in Medicine and Surgery. V. H. Moon, Philadelphia.—p. 1633.

*Atopic Annoyances in Course of Pulmonary Tuberculosis. E. W. Phillips, Phoenix, Ariz.—p. 1649.

Pain: The Patient's Complaint. C. W. Irish, Los Angeles.—p. 1659.

Association of Polycythemia Vera and Peptic Ulcer. D. L. Wilbur and H. C. Ochsner, Rochester, Minn.—p. 1667.

The Present Status of the Problem of "Rheumatism": Review of Recent American and English Literature on "Rheumatism" and Arthritis: Part III. P. S. Hench, Rochester, Minn.; W. Bauer, Boston; A. A. Fletcher, Toronto; D. Ghrist, Los. Angeles; F. Hall, Boston, and P. White, Charlotte, N. C.—p. 1673.

Diabetes Mellitus and Pulmonary Tuberculosis.—Since there is no general agreement regarding the management of diabetes complicated by tuberculosis and the effect of the pulmonary process on the carbohydrate metabolism, McKean and Myers discuss thirty-two of eighty cases selected for nutritional study. Each patient in this group was under observation in the hospital for six or more consecutive months, the average length of stay being 555 days. All seldom or never refused any

portion of the meals served to them and none, the authors believe, obtained additional food elsewhere. The group included five persons in the third decade of life, six in the fourth, ten in the fifth, eight in the sixth and three in the seventh. The sex distribution was about equal. The tuberculosis in twenty-seven cases was far advanced on admission and in five it was moderately advanced. April 1, 1934, seven of the group were dead, one was untraced and twenty-four were known to be alive. Nine of the latter cases were classed as arrested or apparently arrested, four as quiescent, four as improved and seven as unimproved. The deaths were all due to tuberculosis. None of the patients who died in the hospital showed a clinical degree of acidosis at death. Severe insulin reactions occurred in many whose strength was slightly or moderately impaired without threatening life. The available dextrose in the diet in excess of the insulin required to keep the blood sugar below 140, calculated on the basis that 2 Gm. of dextrose is covered by 1 unit of insulin, may serve as an index of carbohydrate tolerance. The carbohydrate tolerance was regarded as markedly improved when there was an increase of more than 50 Gm. in the available dextrose uncovered by insulin, slightly improved when there was an increase of from 15 to 49 Gm., and unchanged when there was an increase or decrease of less than 15 Gm. A decrease of from 15 to 49 Gm. was considered a slight fall in carbohydrate tolerance; a decrease of more than 50 Gm. a marked fall. According to these criteria, the carbohydrate tolerance showed a marked improvement during the period of hospitalization in eleven cases, a slight improvement in four, no change in seven, a slight fall in four, and a marked fall in six. Twelve patients had been under observation in diabetic clinics prior to the onset of the tuberculosis. Five of these showed a marked fall in tolerance with the advent of the tuberculosis, five a slight fall and two no appreciable change. Several patients showed periods of improvement and retrogression in the tuberculosis. It does not necessarily follow, of course, that the change in tuberculosis was responsible for the change in carbohydrate tolerance merely because the two were coincidental. However, care was taken to eliminate from consideration any period in which there was an obvious cause for the change in tolerance apart from the tuberculosis. In twenty-seven instances there was a parallel change in the tuberculosis and diabetes; in seventeen cases the two showed improvement concurrently, and in ten cases both became worse. In thirteen instances the courses of the tuberculosis and diabetes were divergent. An improvement in tuberculosis was accompanied by a fall in carbohydrate tolerance in six cases, whereas the reverse occurred in seven. There appears to be no fixed rule governing the effect of tuberculosis on coexistent diabetes. The courses of the two diseases are usually parallel but may be divergent. An intercurrent pleural effusion, however, is generally accompanied by a temporary fall in tolerance. A marked fall in tolerance occurred coincidentally with the development of an effusion in three cases, a slight fall in six, no appreciable change in three and a slight rise in only one.

The Shock Syndrome.—Moon attempts to correlate the contradictory phases of the shock syndrome, pointing out that it results whenever the volume of blood inadequately fills the vascular system. This may result from loss of blood or fluid, or from atony or dilatation of the vascular walls, especially the capillaries and venules. Combinations of these two factors are the rule. Circulatory failure of this type results not from cardiac or vasomotor inefficiency but from an inadequate return of venous blood from systemic areas. Increased concentration of the blood is a constant feature of shock. This is of clinical value both in recognizing the condition and in determining its degree. Shock produces characteristic changes demonstrable by postmortem examination. These consist of marked capillary and venous congestion of the viscera, edema of lungs and mucosae, petechial hemorrhages in serous and mucous surfaces, and effusion of fluid into serous cavities. Not only does shock occur following extensive surgery or trauma; it is seen in a wide variety of clinical conditions including extensive burns, poisoning with various substances, metabolic intoxications, abdominal emergencies and severe acute infections. Cerebral hemorrhage and other lesions of the central nervous system may terminate in shock the mechanism of which is not evident. Perhaps prolonged vasomotor disturbance results in tissue asphyxia, which in turn causes capillary atony and permeability. Shock develops in varying degrees. Maximal degrees lead to death by circulatory failure. Lesser degrees may be followed by recovery or by death from pneumonia. Many cases of secondary pneumonia have their origin in this type of circulatory disturbance.

Atopic Annoyances in Course of Pulmonary Tuberculosis.—Phillips uses the word "atopic" to characterize spontaneous acquired sensitization to a foreign protein, excluding the delayed inflammatory reaction of the infected individual to tuberculoprotein, a reaction generally described as "allergic." A series of 250 consecutive tuberculous patients are included in the study, fifty of whom showed during the period of observation clinically evident sensitization to identified foreign proteins. Four others had symptoms quite as typical, but their atopens could be demonstrated only by the therapeutic test. In thirty-four cases, sensitization to pollens was indicated by skin tests confirmed by the effect of pollen therapy and in certain instances further substantiated by the relief afforded by residence in the filtered air of an allergen-free room. Sixteen patients were found to be sensitive to foods alone, and seven of the pollen-sensitive group reacted to foods as well. The offending foods were most often those which the patients had taken in excess in the hope of gaining weight: milk and egg, cocoa, tomato, cod liver oil, wheat, potato and chicken. The four patients whose atopens could be identified only indirectly had eosinophilia, a positive family history and negative skin tests. The symptoms of food sensitivity resembled frequently the digestive disturbances incident to the toxemia of tuberculosis; less often, those caused by organic disease of the digestive tract. Both sorts were relieved by exclusion of the offending foods from the diet. The discomfort incident to pollinosis interfered with the patients' rest and was detrimental to their general health. Food sensitivity, in addition to this, impaired their nutritional state. In dealing with food sensitivity in tuberculous patients, the diet should not be restricted to the point of causing continued loss of weight. Patients with chronic tuberculosis on the rest treatment, spending most of their days and nights in the open air, are heavily exposed to pollen in the pollinating seasons. The same patients, leading a monotonous life and desiring to gain weight, are likely to eat in excess foods, such as milk and egg, and tend to become sensitized to them. Appropriate pollen therapy, before or during the attack, may safely be employed in the presence of active tuberculosis. The recognition and proper management of sensitivity to foreign proteins constitute a useful addition to the hygienic treatment of tuberculosis.

Archives of Otolaryngology, Chicago

21: 633-748 (June) 1935

Cardiospasm: Report of Two Cases with Postmortem Observations. P. B. MacCready, New Haven, Conn.—p. 633.
Sarcoma of Larynx: Report of Two Cases. G. B. New, Rochester, Minn.—p. 648.
Nasal and Bronchial Allergy in Childhood. A. H. Rowe, Oakland, Calif.—p. 653.
*Value of Reflex Contraction of Muscles of Middle Ear as Indicator of Hearing. H. Kobrak, J. R. Lindsay and H. B. Perlman, Chicago.—p. 663.
Subcortical Fistulas of Anterior Surface: Their Management in Suppuration of Petrous Pyramid. M. C. Myerson, New York; H. Rubin and J. G. Gilbert, Brooklyn.—p. 677.
Ear and Cranial Trauma. A. B. Murphy, Everett, Wash.—p. 686.
Syndrome of Diplacusis and Nerve Deafness for Low Tones. G. E. Shambaugh Jr., Chicago.—p. 694.
Noncancerous Epithelial Tumor Obstructing Bronchus of Upper Lobe of Left Lung. J. W. Miller, New York.—p. 703.
Surgical Approaches to Deep Suppuration in Neck and Posterior Mediastinum. S. Iglauer, Cincinnati.—p. 707.

Reflex Contraction of Muscles of Middle Ear as Indicator of Hearing.—The experiments of Kobrak and his associates in determining the value of the reflex of the muscles of the middle ear as an indicator of hearing reveal that: 1. The acoustic contractions of the tensor muscle are almost always present in rabbits and allow easy quantitative measurements under the same procedure as a clinical test with the audiometer. Quantitative comparison of the contractions in different animals does not always show satisfactory uniformity. 2. Continued observations on one animal over several hours show a remarkable constancy. The reflex is therefore reliable

as an indicator of hearing for acute experiments. 3. Continued observations on one animal over several days show a high degree of constancy. 4. Comparison of the response of the left and that of the right tensor muscle does not show any considerable variation. 5. Small changes of the position of the animal and especially of the position of the pinna do not produce considerable differences, so it is not important to place too much significance on minute displacements of the loud speaker or of the animal. The application of the sound may be carried out in the natural way and not necessarily by means of rubber tubes. 6. The comparison between the readings of two different but equally trained observers shows a constancy which is about equal to that in clinical tests of hearing. Besides the experiments in rabbits, observations on the stapedius reflex in man have been carried out. It was possible to compare the curve of hearing and the curve of the reflex response of the stapedius muscle quantitatively and to express the difference in decibels. The inconstancy in the distance between the two curves is probably due to individual peculiarities of the middle ear (adhesions of tendon). However, the relationship between the two curves is such that a good curve of the reflex of the stapedius muscle may be taken to indicate a relatively good curve of hearing. This might be used clinically, for example, in cases of malingering.

Georgia Medical Association Journal, Atlanta

24: 199-240 (June) 1935

Medicine as a Career. C. L. Ayers, Toccoa.—p. 199.
Care of the Normal Obstetric Patient. O. R. Thompson, Macon.—p. 204.
Menstrual Disorders: Functional Types. B. T. Beasley, Atlanta.—p. 207.
Discussion of Mortalities Following Operation on Thyroid Gland in Atlanta, 1929 to 1933, Inclusive. B. H. Clifton, Atlanta.—p. 212.
Some Clinical Observations and Treatment of Eczema. H. Hailey, Atlanta.—p. 218.
Eyes as Related to Sinusitis. J. A. Smith, Macon.—p. 219.
The Atlantic City Session of the American Medical Association. C. W. Roberts, Atlanta.—p. 222.

Illinois Medical Journal, Chicago

67: 485-572 (June) 1935

Fundamentals of Medical Religion. C. S. Skaggs, East St. Louis.—p. 500.
Survey of the Medical Situation. C. B. Reed, Chicago.—p. 506.
Simultaneous Bilateral Operative Removal of Renal and Ureteral Calculi: Report of Case. L. D. Smith, Chicago.—p. 512.
Intestinal Obstruction. F. Christopher, Evanston.—p. 515.
Leukoplakia Oralis. C. M. Epstein, Chicago.—p. 517.
*Skin Test for Diagnosis of Gonococcic Infections: Preliminary Report. B. C. Corbus, Chicago.—p. 521.
Review of Blood and Spinal Fluid Reports. F. W. Sokolowski, Alton.—p. 524.
Management of Vertex Presentation by Episiotomy and Outlet Forceps. C. E. Galloway, Evanston.—p. 526.
*Postoperative or Incisional Hernias of Anterior and Lateral Abdominal Wall. A. P. Heineck, Chicago.—p. 529.
Basal Pulmonary Tuberculosis. O. B. Ragins and E. B. Freilich, Chicago.—p. 537.
My Experience with Intravenous Injections of Mercurochrome in About Four Hundred Cases. A. P. Martin, Chicago.—p. 539.
Systemic Blastomycosis with Recovery. H. J. Wing, Maywood.—p. 551.
Primary Bronchogenic Carcinoma with Metastases: Report of Case. D. J. Louis, Chicago.—p. 552.
How to Facilitate Labor. S. D. Soter, Chicago.—p. 554.
Intra-Abdominal Hemorrhage of Ovarian Origin. H. N. Rafferty and T. N. Rafferty, Robinson.—p. 559.
Conditions of Uterus Necessary for Version: Physiologic and Clinical Consideration. L. Rudolph.—p. 561.

Skin Test for Diagnosis of Gonococcic Infections.—Corbus performed experiments that show that the specific exotoxin present in the gonococcus bouillon filtrate (Corbus-Ferry), when 0.15 cc. is injected intradermally, is in sufficient quantities to obscure the true allergic reaction in individuals infected with the gonococcus. Clark, Ferry and Steele pointed out that a large proportion of normal persons give cutaneous reactions when injected with dilutions as low as 1:1,500. This precludes its use as a specific diagnostic skin test for gonococcic infections. With this added information in mind, the bouillon (Corbus-Ferry) filtrate was detoxified by fractional heating and experiments were performed, 0.1 cc. instead of 0.15 cc. being used. It appears that in individuals with either negative or positive histories of gonorrheal infection a positive allergic reaction with detoxified gonococcus filtrate (Corbus-Ferry) is evidence of gonorrheal infection. It also appears that this allergic condition may be passively transferred to a normal person even as early as forty-eight hours after the onset of the infection. It is likely that this allergic condition remains constant for the duration of the infection. It is also possible that this skin test will have further value in determining when a given patient is cured of the infection.

Incisional Hernias.—Heineck points out that by eliminating the etiologic factors of incisional hernias the incidence of the deformity and infirmity can be minimized and almost completely prevented. Every case of incisional hernia calls for fascial fortifying of the path of escape of the hernial contents. The use of autogenous living fascia lata transplants, either as approximating sutures or as a substitute for hernial defects, has proved satisfactory when employed with proper technic. A permanent bond of union and closure of the hernia results. The use of the Masson "fascial stripper" facilitates the removal of autogenous living transplants and causes negligible and only minimal scarring of the thigh. This instrument is made to glide between the muscles and the subcutaneous fat, detaching the fascia and cutting it in desired lengths. Ox fascia lata, sterilized and preserved in alcoholic solution, can be used either as suture material or in sheets in the repair of postoperative hernial defects. The use of ox fascia eliminates the objectionable feature of an associated operation on the thigh. It has given satisfactory results.

Indiana State Medical Assn. Journal, Indianapolis

28: 313-364 (July 1) 1935

Emergency Surgical Treatment. N. K. Forster, Hammond.—p. 313.
Morax-Axenfeld Conjunctivitis. R. D. Smith, Crawfordsville.—p. 317.
Intracapsular Extraction of Senile Cataract. C. P. Clark, Indianapolis.—p. 319.
Operating the Diabetic. E. E. Padgett, Indianapolis.—p. 323.
Hobbies for Physicians. C. B. Paynter, Salem.—p. 326.
Consideration of Treatment of Complicated Appendicitis (Variously Grouped as Perforated, Gangrenous, and Suppurative Appendicitis, Appendiceal Abscess, Local and General Peritonitis). E. D. Clark and J. K. Berman, Indianapolis.—p. 329.

Journal of Infectious Diseases, Chicago

56: 225-350 (May-June) 1935

Systematic Study of Pasteurella Genus and Certain Closely Related Organisms. G. D. Brigham and L. F. Rettger, New Haven, Conn.—p. 225.
Preparation of Specific Bacterial Carbohydrate Substances by Electrolysis. A. C. H. Yen and T. J. Kurotchkin, Peiping, China.—p. 238.
Studies on Antigenic Structure of Variants of Staphylococcus Aureus: I. Carbohydrates of Rough and Smooth Forms of Staphylococcus Aureus. Rachel E. Hoffstadt and W. M. Clark, Seattle.—p. 250.
Oxidation-Reduction Potentials in Salmonella Cultures: I. Development of Potential Levels Characteristic of Species. W. Burrows and E. O. Jordan, Chicago.—p. 255.
*Studies on Relation of Bacterium Granulosis to Trachoma. F. F. Tang and C. H. Chou, Shanghai, China.—p. 264.
Influence of Hydrogen Ion Concentration on Dissociation of B. Friedländer and M. Tuberculosis. W. Steenken Jr., Trudeau, N. Y.—p. 273.
Biologic Studies of Saprophytic Acid-Fast Organisms: I. Dissociation of Mycobacterium Phlei. S. A. Petroff and W. Steenken Jr., Trudeau, N. Y.—p. 277.
Antigenic Reactions of Staphylococcus Aureus and Its Variants. Rachel E. Hoffstadt and G. P. Youmans, Seattle.—p. 288.
Relation of Allergy to Antibody Content in Animals Vaccinated with B C G. B. J. Clawson and A. B. Baker, Minneapolis.—p. 297.
Attempts to Transmit Chicken Leukosis by Mosquitoes and by Mites. H. L. Ratcliffe and E. L. Stubbs, Philadelphia.—p. 301.
Studies on Bacterial Nutrition: I. Separation of Growth Factors from Veal Infusion. S. A. Koser and F. Saunders, Chicago.—p. 305.
Relation of Incidence of Serum Disease to Square Root of Amount of Antiserum Injected. T. D. Gerlough, New Brunswick, N. J.—p. 317.
*Experimental Brucellosis in Dogs. W. H. Feldman, J. L. Bollman and C. Olson Jr., Rochester, Minn.—p. 321.
Studies on Anaerobic Bacteria: V. Serologic Agglutination of Clostridium Acetobutylicum and Related Species. Elizabeth McCoy and L. S. McClung, Madison, Wis.—p. 333.

Studies on Relation of Bacterium Granulosis to Trachoma.—The attempts of Tang and Chou to isolate Bacterium granulosis in 179 cases of classic trachoma were negative. The specimens used for cultivation consisted of lacrimal secretions, epithelial scrapings, follicular contents and tarsectomized tissue. The mediums used were "leptospira" semisolid medium and carbohydrate blood agar plates. Attempts to induce trachoma in rhesus monkeys and in man by subconjunctival injec-

tion of cultures of Bacterium granulosis were negative. A disease of the conjunctiva characterized by follicle formation, but with no pannus formation or papillary hypertrophy, was induced in two out of nine monkeys injected with human trachomatous material. Bacterium granulosis was not isolated at any time from either of these animals. Antibodies against Bacterium granulosis could not be demonstrated in the serums of twenty-six subjects suffering from acute or chronic trachoma.

Experimental Brucellosis. — Feldman and his associates introduced two strains of Brucella abortus, obtained from swine and bovine sources, respectively, into a series of eleven adult mongrel dogs to determine (1) whether a definite state of disease could be induced and (2) whether there was any significant difference in the pathogenic behavior of the swine and bovine varieties of Brucella in dogs. Five of the dogs received the bacteria in suspension intravenously and six were fasted twenty-four hours and were fed the organism mixed with raw meat. Brucella agglutinins developed as early as the fourth day in animals receiving the organisms intravenously, and in this group titers of from 1:800 to 1:1,600 were not uncommon one week after the introduction of the organism. Successive titers varied considerably in many cases. For those animals receiving the infective agent orally, the agglutinative response was much slower and was never as pronounced as for those receiving it intravenously. In a few cases it was possible to isolate Brucella abortus from the blood stream, but only within two or three weeks after introduction of the infective material. From two of the dogs it was possible to obtain the organism in the urine. Although most of the dogs lived for several months after receiving the infective bacteria, clinical symptoms of disease and specific lesions of minor significance were observed in only one dog. From only two of the dogs did the authors succeed in recovering Brucella abortus after death, and both had received the infecting inoculum intravenously, one dog thirty-nine days and the other 185 days previously. There was no discernible difference in the pathogenic propensities of the two varieties of Brucella abortus used. While the dog is capable of producing Brucella agglutinins following experimental introduction of either the swine or bovine varieties of Brucella abortus, a profound resistance to the organism exists, which precludes in most instances the development of clinical symptoms and specific lesions.

Laryngoscope, St. Louis

45: 405-488 (June) 1935

Flying Blind: Study in Physiology of the Eighth Nerve. I. H. Jones, Los Angeles, and W. C. Ocker.—p. 405.
Conservatism in Petrosal Empyema. C. Hall, Los Angeles.—p. 421.
*Evaluation of Symptoms in Meningitis and Brain Abscess. M. A. Weinstein, Philadelphia.—p. 427.
Medical Aspects of Hearing Conservation in the New York Schools. E. P. Fowler, New York.—p. 435.
Sinusitis in Children. H. J. Burman, New York.—p. 440.
Some Features in Sinus Operations and Therapy. J. Prenn, Boston. —p. 452.
Need for Improved Technic in Tonsillectomy. A. F. Holding, Albany, N. Y.—p. 458.
Syphilis of Tonsil: Report of Two Cases. F. S. Mainzer, Clearfield, Pa.—p. 466.
Critical Analysis of Methods of Physical Therapy in Rhinolaryngology. L. M. Hurd, New York.—p. 468.
Scientific Status of Physical Therapy in Otology. A. R. Hollender, Chicago.—p. 471.
Physiologic Basis of Physical Measures in Otolaryngology. R. Kovacs, New York.—p. 480.

Symptoms in Meningitis and Brain Abscess.—Weinstein describes tuberculous meningitis in a man, aged 55, who was brought to the hospital in a condition of stupor. The consulting neurologist regarded the condition as a reactive or serous meningitis and as a focal cerebritis in the left hemisphere from an adjacent ear condition. Necropsy revealed tuberculous meningitis with no trace of any abscess cavity in the brain. The author in evaluating the symptoms of meningitis and brain abscess points out that the finding of a quiescent chronic otitis media reinforced by such symptoms as headache, motor aphasia, rigidity of the neck, increased reflexes and mental confusion prejudged and confirmed the diagnosis of otitic abscess. But all these manifestations of generalized intracranial pressure and to some extent focal localization may also be due to an infectious encephalitis. An otitic brain abscess must originate by contact infection with a diseased temporal bone. Once the infection has crossed the meninges into the brain substance and induced an abscess, its growth is gradual. During this latent stage a number of vague toxemic symptoms may appear. When the abscess becomes manifest, symptoms of toxemia become aggravated; signs of intracranial pressure due to its increase in size, and injury to vital centers, impairing or destroying their function, make their appearance. A quite constant and important pressure symptom is a slow pulse, below 50, while in meningitis it is usually rapid. Aphasic disturbances are among the first and most frequent dysfunctions as the result of destruction of brain tissue in the temporal lobe and the adjacent brain tissue; their existence points clearly to an abscess in that region. Rigidity of the neck is present in brain abscess, but mostly when it affects the posterior fossa; otherwise it is a symptom of associated meningitis just as the Kernig and the motor irritation symptoms, such as increased reflexes, Babinski and Oppenheim. Repeated lumbar punctures before and after a mastoidectomy performed on the author's patient gave a clear fluid, while every brain abscess should show a turbid liquor. The cerebrospinal fluid gave a sterile, clear, predominantly polymorphonuclear liquor with diminished chlorides. He concludes that these laboratory observations in conjunction with the several contradictory symptoms made the diagnosis of brain abscess, regardless of the alluring discovery of a focus of infection, if not improbable, at least questionable.

Medical Annals of District of Columbia, Washington

4: 153-184 (June) 1935

Operations for Radical Cure of Cancer. R. B. Greenough, Boston.—p. 153.
The Psychiatric Dispensary. R. S. Cohen, Washington.—p. 158.
Size and Shape of Heart. B. W. Leonard, Washington.—p. 162.
Leukorrhea. H. F. Kane, Washington.—p. 166.
Pseudosurgical Abdominal Attacks in Diabetes Mellitus. J. H. Lyons, Washington.—p. 169.

Minnesota Medicine, St. Paul

18: 351-420 (June) 1935

History of Development of Surgery for Peptic Ulcer. E. S. Judd, Rochester.—p. 351.
Management of Essential Hypertension. E. L. Tuohy, Duluth.—p. 354.
*Lysozyme: One of Natural Defense Factors of the Eye. A. C. Hilding, Duluth.—p. 360.
Use of Living Sutures in Repair of Abdominal Hernias. J. C. Masson, Rochester.—p. 365.
Clinical Studies in Juvenile Rheumatism. M. J. Shapiro and Gertrude K. Shapiro, Minneapolis.—p. 370.
*Mumps Meningo-Encephalitis. T. L. Birnberg, St. Paul.—p. 377.
Effects of Early Postoperative Feeding. O. I. Sohlberg, St. Paul. —p. 382.

Lysozyme.—Hilding states that there is a natural antiseptic, chemically an enzyme, that is found widespread through the body fluids and tissues. It has the power of destroying and dissolving certain groups of bacteria even when highly diluted. It is found most abundantly in tears, very abundantly also in nasal mucus. Its purpose in these two secretions seems to be to protect one from the atmospheric bacteria for which it is deadly. The pathogenic bacteria are inhibited in their growth by it but are not necessarily destroyed. The lysozyme content of tears falls moderately in a number of the acute external diseases. In fact, it falls during any epiphora. That this has any etiologic significance is not thoroughly established. In vitamin A deficiency and xerophthalmia, however, there is a marked decrease in lytic power that seems fairly definitely to have an etiologic importance in the development of infection and keratomalacia. The three humors within the eye showed little or no lytic power when tested and therefore probably contain little or no lysozyme.

Mumps Meningo-Encephalitis.—Birnberg observed nine cases of mumps meningo-encephalitis in the last eighteen months. This relatively high incidence suggested the possibility that many cases may be unrecognized; further, the increase also of cases of epidemic encephalitis, during this period, suggests some possible causal relationship. The problem of diagnosis rests essentially on the knowledge that neurologic complications do occur and on the recognition of the related mumps, the circumstantial evidence of mumps contact or a

prevalent mumps epidemic. To the author the relatively mild symptoms in comparison with the high spinal fluid cell count is a valuable differential criterion. In treatment, spinal drainage and symptomatic procedures are all that are indicated.

New England Journal of Medicine, Boston

212: 1111-1152 (June 13) 1935

Old Age and Basal Metabolism. F. G. Benedict, Boston.—p. 1111.
Primary Pneumococcus Arthritis: Report of Case. M. H. Bloomberg, Boston.—p. 1122.
Social Trends Underlying Health and Hospital Insurance. S. R. Roberts, Atlanta, Ga.—p. 1123.
Progress in Anesthesia in 1934. R. F. Sheldon, Boston.—p. 1129.

212: 1153-1196 (June 20) 1935

Secondary Operations of Common Bile Duct. R. H. Miller and M. K. Bartlett, Boston.—p. 1153.
Transitory Visual Disturbances in Diabetes Mellitus: Report of Cases. A. Rudy and B. Sachs, Boston.—p. 1157.

Northwest Medicine, Seattle

34: 191-234 (June) 1935

*Recent Trends in Obstetric Analgesia: National Questionnaire. C. E. Hunt, Eugene, Ore.—p. 191.
When Is Food Toxic? C. U. Moore, Portland, Ore.—p. 196.
Gastro-Intestinal Allergy: Points to Consider in Its Diagnosis. M. W. Moore, Portland, Ore.—p. 200.
Urinary Proteose in Dermatology. S. E. Light, Tacoma, Wash.—p. 203.
Surgical Progress in 1934. R. D. Forbes, Seattle.—p. 206.
Operation for Diverticulum of the Esophagus: Facilitated by Use of Nasal Catheter and Stomach Tube. D. Metheny, Seattle.—p. 210.
Bowel Distention. L. P. Gambee, Portland, Ore.—p. 212.
History of Multnomah County Medical Society. O. Larsell, Portland, Ore.—p. 218.
Roentgenoscopy of Chest: Its Limitations and Dangers. H. E. Nichols, Seattle.—p. 222.

Recent Trends in Obstetric Analgesia.—Based on the statements of seventy-eight of the leading obstetricians of the country, Hunt observed that: 1. There is a great increase in scientific interest in the subject of obstetric analgesia on the part of the profession. 2. Numerous drugs in various combinations are being used in an attempt to meet the requirements under various conditions. 3. The ideal obstetric analgesia has not yet been perfected. 4. No routine method can be used in all cases, and there is no method that does not possess dangers for the mother and child unless handled with great care and intelligence. 5. The best results are obtained by being familiar with more than one method and individualizing the patient. Only large experience with various drugs will prepare the obstetrician to administer them skilfully. 6. The use of any method entails a greater expenditure of time and greater responsibility on the part of the obstetrician. 7. There is a distinct tendency away from a complete twilight sleep as well as a complete Gwathmey technic. Twilight sleep should be employed in well equipped hospitals by those skilled in its use. The Gwathmey method is adaptable for use in homes by practitioners. 8. There seems to be an increase in the use of scopolamine combined with various methods to increase amnesia. 9. Parts of various methods are being combined. 10. There is a great increase in the use of various barbiturates and a decrease in the use of morphine and its derivatives. Barbiturates can be given earlier in labor than any other drug, with less effect on the baby. 11. The most widely used and most satisfactory barbiturate in obstetrics is pentobarbital sodium. Its combination with rectal ether-oil after the method of Irving and others enhances its action and counteracts its tendency to cause excitability. 12. Rectal ether-oil is being used extensively in combination with the barbiturates and other drugs. 13. Serious attempts are being made to find a drug that will combine the favorable features of the barbiturates and yet be free from their tendency to cause excitement.

Ohio State Medical Journal, Columbus

31: 481-560 (July 1) 1935

*Cistern (Suboccipital) Puncture. D. J. Kindel, Cincinnati.—p. 497.
Postoperative Treatment of Cataract. A. B. Bruner, Cleveland.—p. 501.
Rôle of Glandular Therapy in Treatment of Behavior Disorders of Children. L. A. Lurie, Cincinnati.—p. 504.
Postpartum Care. W. D. Fullerton, Cleveland.—p. 509.
Some Remarks on Pharyngeal Lymphatics: Indication for Tonsil and Adenoid Operation. H. G. Beatty, Columbus.—p. 511.
Comfortable Feet for the Worker. C. L. Ferguson, Portsmouth.—p. 520.

Oklahoma State Medical Assn. Journal, McAlester

28: 199-246 (June) 1935

Your Brother and You. L. H. Ritzhaupt, Guthrie.—p. 201.
Public Health and Organized Medicine. C. M. Pearce, Oklahoma City.—p. 204.
Postoperative Pneumothorax: Case Report and Consideration of Factors That Might Be Concerned in Its Etiology. F. G. Dorwart, Muskogee.—p. 205.
Cancer of Colon and Rectum. R. L. Murdoch, Oklahoma City.—p. 208.
Acute Mastoiditis. H. S. Browne, Ponca City.—p. 210.
Observations Bearing on Use of Ultraviolet Rays and Sunlight. M. O. Nelson, Tulsa.—p. 212.

Pennsylvania Medical Journal, Harrisburg

38: 675-768 (June) 1935

Blood Studies in Otolaryngology. W. V. Mullin, Cleveland.—p. 675.
Medical Management of Hemorrhagic States in Childhood. I. N. Kugelmass, New York.—p. 679.
Treatment of Angina Pectoris. C. C. Wolferth, Philadelphia.—p. 690.
Inheritance and Disease. J. H. Barach, Pittsburgh.—p. 693.
Repeated Blood Sugar Determinations in Certain Cases of Diabetes. E. P. Griffiths and L. C. Shrader, Pittsburgh.—p. 699.
Pregl's Solution in Treatment of Ocular Conditions. A. Cowan, Philadelphia, and J. S. Jordan, Scranton.—p. 704.
Management of Underweight Children. G. J. Feldstein, Pittsburgh.—p. 706.
Anuria as Surgical Complication. F. G. Harrison, Philadelphia.—p. 710.
*Hypertension Simulating Thyrotoxicosis. R. L. Hamilton and A. P. Knight, Sayre.—p. 717.

Hypertension Simulating Thyrotoxicosis.—Hamilton and Knight believe that all patients suspected of hyperthyroidism should be examined carefully as to cardiac competence and blood pressure. A patient with an increased basal metabolic rate in whom there is also an increase in blood pressure should be critically considered as to whether the hypertension is due to the thyrotoxicosis or whether it is a separate or distinct entity. The symptoms of thyrotoxicosis and hypertension seem to be an expression of an increased tonus of the sympathetic nervous system, principally giving rise to an abnormal rhythm in the thyroid and adrenals. These symptoms are modified, however, by a mild parasympathicotonia in certain cases. A study of 215 selected case records showed that there was an increase in the systolic pressure both in the exophthalmic group and in those patients with adenomas and hyperthyroidism, as compared to the control series. Patients with thyrotoxicosis followed by thyroidectomy showed a small drop in systolic but a slight rise in diastolic pressure. There is no noticeable relationship between the blood pressure and the basal metabolic rate, except in the general averages of some groups and then not to a significant degree. The changes in blood pressure were consequent on age. There was a definite increase in the blood pressure of patients with thyrotoxicosis compared to the control group. Hypertension was a relatively frequent occurrence in patients with thyrotoxicosis. There was a significant drop in the basal metabolic rates of all thyrotoxic patients following thyroidectomy, and the basal metabolic rate following thyroidectomy was practically the same as that of the control group. A review of the literature and a survey of the cases suggest that the adrenal and thyroid are intimately associated in the production of the symptoms of hypertension and hyperthyroidism and that the adrenals are apparently the dominant controlling factor. Therefore any treatment that might be directed toward the lessening of the adrenal activities should be of some value in the control of these diseases.

Public Health Reports, Washington, D. C.

50: 831-854 (June 21) 1935

*Benign Lymphocytic Choriomeningitis (Acute Aseptic Meningitis): New Disease Entity. C. Armstrong and P. F. Dickens.—p. 831.

50: 855-890 (June 28) 1935

Leprosy: Effect of Vitamin B_1 Deficient Diet on Incubation Period of Rat Leprosy. L. F. Badger and W. H. Sebrell.—p. 855.

Benign Lymphocytic Choriomeningitis.—Armstrong and Dickens describe a symptom complex of headache, fever, meningeal irritation, and cerebrospinal fluid under increased pressure, with an increase in cells (with a lymphocytic response dominant) above 50, coupled with a normal chloride, sugar and urea content in the cerebrospinal fluid and a negative spinal fluid Wassermann reaction. This disease entity has previously

been designated in man as acute aseptic meningitis. The virus of Armstrong produces a similar symptom complex in monkeys. The blood serum of patients who have recovered from the disease protects animals from the virus of Armstrong. This disease occurs sporadically in man and has been transferred experimentally to animals. Traub has isolated a virus from white mice, and Rivers and Scott have isolated a virus from human patients, which are serologically identical with the National Institute of Health strains of the Armstrong virus. This condition by priority should be designated acute aseptic meningitis, but "acute lymphocytic choriomeningitis" is a more accurate designation.

Rhode Island Medical Journal, Providence

18: 81-92 (June) 1935

Twenty-Five Years of Pediatrics. H. E. Utter, Providence.—p. 81.
New Treatment for Tenosynovitis (Unna's Paste Boot). J. Fieldman, Brockton, Mass.—p. 89.

Surgery, Gynecology and Obstetrics, Chicago

61: 1-144 (July) 1935

Physiologic Responses of Transplanted Prostatic Tissue in Anterior Chamber of Eyes of Rabbits. N. J. Heckel and H. L. Kretschmer, Chicago.—p. 1.
Ileocolitis: Acute Ileocolitis Simulating Appendicitis and Characterized by Edema of Ileocecal Region and Mesenteric Glands: Its Relation to "Regional Ileitis" or "Chronic Cicatrizing Enteritis." I. H. Erb and A. W. Farmer, Toronto.—p. 6.
Experimental Production of Excessive Endometrial Hyperplasia. S. Zuckerman and A. H. Morse, New Haven, Conn.—p. 15.
*Experimental Studies on Effects of Perforation of Peptic Ulcers. A. Blalock, Nashville, Tenn.—p. 20.
*Further Quantitative Determinations of Prolan and Estrin in Pregnancy, with Especial Reference to Late Toxemia and Eclampsia. G. Van S. Smith and O. W. Smith, Brookline, Mass.—p. 27.
Synthesis of Hippuric Acid: Its Value in Detecting Hepatic Damage Secondary to Diseases of Extrahepatic Biliary System. P. F. Vaccaro, Monongahela, Pa.—p. 36.
Dysontogenetic and Mixed Tumors of Urogenital Region: Report of New Cases of Sarcoma Botryoides Vaginae in a Child, and Comments on Probable Nature of Sarcoma. J. McFarland, Philadelphia.—p. 42.
Transpleural Nephropexy. W. J. Moore, Glasgow, Scotland.—p. 58.
*Chondrosarcoma: Relation of Structure and Location to Clinical Course. O. T. Roberg Jr., Graz, Austria.—p. 68.
*Surgical Treatment of Severe Forms of Lymphedema (Elephantiasis) of the Extremities: Study of End Results. R. K. Ghormley and L. M. Overton, Rochester, Minn.—p. 83.
Correction of Hip Flexion Deformity in Anterior Poliomyelitis: A Result Study. G. deN. Hough Jr., Springfield, Mass.—p. 90.
Osteomyelitis in Infants. R. B. Dillehunt, Portland, Ore.—p. 96.
Mesenteric Venous Thrombosis. S. Warren and T. P. Eberhard, Boston.—p. 102.

Perforation of Peptic Ulcers.—Blalock performed experiments to find the factors which are mainly responsible for the rapidly developing signs and symptoms that follow the perforation of peptic ulcers. The alterations in the circulation which are produced by the introduction into the peritoneal cavity of the various juices of the upper intestine were studied. Bile, pancreatic juice, gastric juice and duodenal secretion were obtained by cannulation. The juices were injected with a syringe and needle into the peritoneal cavities of other dogs. 1. Following the injection of rather large amounts of one or more of the juices of the upper intestine the animals became ill almost immediately. There was usually an increase in the pulse rate and vomiting. 2. Death did not occur in any of the nine experiments in which sterile pancreatic juice varying in amounts from 11 to 39 cc. per kilogram of body weight was injected. Infected pancreatic juice in smaller quantities produced death. 3. Bile that is recovered after the first several days following the cannulation of the common duct exerts more ill effects when injected into the peritoneal cavity than that which is collected later. Six experiments were performed in which uninfected bile obtained from animals operated on less than four days previously was injected into other animals in amounts equaling 21 cc. or less per kilogram of body weight. All the recipients became quite ill, but only one died. 4. Eleven experiments were performed in which equal quantities of uninfected bile and pancreatic juice were injected into the peritoneal cavity. The amounts introduced were closely comparable to those injected in the studies in which bile or pancreatic juice alone was used. Four of the animals died, and it seemed quite definite that the combination of bile and pancreatic juice is more toxic than an equal volume of either of them. 5. Death did not occur in any of the nine experiments in which a corresponding quantity of gastric juice was used or in the three experiments in which duodenal secretion was injected. These two secretions seemed to result in less harm than a corresponding quantity of bile alone or a combination of bile and pancreatic juice. 6. The animals that died as a result of the introduction of one or more of the secretions exhibited marked reddening of the intraperitoneal structures. This reddening and the presence of massive fat necrosis was particularly marked in the experiments in which the mixture of bile and pancreatic juice was injected. There was usually a large quantity of free fluid in the peritoneal cavity at necropsy, but this quantity by itself alone was not sufficient to account for the decline in blood volume and death. It is possible that this quantity with the blood that was present in the many dilated intraperitoneal blood vessels might be sufficient. The increase in the concentration of the red blood cells in some experiments was extreme, while in others it was not marked. 7. Studies on the cardiac output and blood pressure were performed before and following the injection of bile or pancreatic juice or both. The major early alteration consisted of a decline in the blood pressure, as is found in primary shock, and the subsequent change consisted of a greater drop in the cardiac output than in the blood pressure, as is found in secondary shock.

Quantitative Determinations of Anterior Pituitary-like Principle and Estrogenic Substance in Pregnancy.—The further quantitative studies of the Smiths of anterior pituitary-like principle and estrogenic substance in twenty-seven additional cases confirm their previous observations of excessive gonad-stimulating hormone and, less consistently, subnormal levels of the estrogenic in the toxemias of late pregnancy and eclampsia. They also indicate that: 1. In normal pregnancy a peak in the level of anterior pituitary-like principle occurs during the second, third or fourth month, followed by a marked drop. During the remainder of pregnancy the anterior pituitary-like principle maintains almost a constant level. 2. The amount of estrogenic material increases as pregnancy advances, reaching a peak at term. There is usually a marked elevation of the substance level between the third and fifth months. 3. In cases of toxemia of late pregnancy an excess of anterior pituitary-like principle has probably been present for some time before the appearance of toxic symptoms. High levels of anterior pituitary-like principle during the sixth and seventh months in apparently normal women, therefore, may indicate that toxemia will develop, whereas normal figures at this time favor the prediction of continued normal pregnancy. A rise after the seventh month may not be significant, since delivery occurs so soon. 4. No abnormal figures for anterior pituitary-like principle or estrogenic substance can be described as typical of miscarriage. 5. The nausea of early pregnancy may be associated with a low estrogenic factor. 6. Although the highest values for serum of the anterior pituitary-like principle have been encountered in cases of eclampsia, the degree of excess of anterior pituitary-like principle does not always run parallel with the severity of the symptoms. 7. Quantitative analyses of serum of the anterior pituitary-like principle may be of diagnostic assistance in differentiating between toxemic and nephritic conditions. 8. Quantitative analyses on women who in the middle third of pregnancy are showing some toxic symptoms may be of prognostic value.

Chondrosarcoma.—Roberg presents nine cases of chondromyxomatous tumors from a clinical standpoint. Six of these were malignant sarcomas, two chondromas and one a circumscribed chondrosarcoma occurring in a toe. The close histologic relationship of these tumors is reason for seeking a connection between their clinical course and deviations from a unity of structure and factors apart from their histologic composition. From these features are derived factors of prognostic value: 1. Limitation by a capsule of cortical bone, characteristic of the chondromyxomatous tumors of the small bones of the hand and foot, is usually accompanied by a slow, local-

ized growth. 2. A predominantly myxomatous tissue is less invasive and more slowly growing than that in which a greater differentiation of cartilage cells has occurred. Although the standpoint that myxomatous tissue is the least differentiated form of cartilage seems confirmed in these cases, the implied contradiction may be explained by an inhibitory effect of the myxomatous matrix on the cells which are contained in it, and by the view that bony differentiation depends partly on the matrix supplied for its formation by the destruction of bone by the less differentiated cells. 3. The chondromyxosarcomas arising on the basis of a preexisting osteochondroma or chondroma pursue a less rapid course after the assumption of a malignant character than those which are malignant from the outset. 4. An incomplete operation greatly accelerates the growth of a chondrosarcoma. 5. The more proximal location of this type of tumor in a limb, or the existence of such a tumor in bone simultaneously undergoing normal developmental metaplasia or in the neighborhood of numerous structures arising from precartilaginous connective tissue, makes the prognosis less favorable. Resistance to radiation, the beneficial effect of which lies chiefly in the stimulation of reactive bone, makes this form of treatment useful only as a supplement to operation. Local, complete removal of an isolated, circumscribed tumor, which exhibits histologically a comparatively uniform structure, makes possible a more radical procedure should there be recurrence. For the undoubtedly sarcomatous members of this group, a resection or amputation is advocated; as much as possible should be removed of the adjoining tissues that are composed of cells which exhibit stages in early cartilaginous development related to the tumor itself, although of an orderly and normal architecture.

Lymphedema of the Extremities.—Ghormley and Overton review the methods of surgical treatment of severe forms of lymphedema and report the end results of cases in which treatment was given at the Mayo Clinic in the last ten years. A sufficiently long interval has elapsed since operation to make it reasonably certain that final results have been obtained. Sixty-four patients have been operated on by the modified Kondoleon method since Sistrunk's report of his technic in 1923. These cases have been followed over a period of from two to ten years. The improvement among patients who were followed was graded on a basis of 0 to 4, the latter signifying almost complete relief. According to this grading, the condition of 12.5 per cent of the patients was unimproved; that of 14 per cent was improved, grade 1; that of 7.8 per cent was improved, grade 2; that of 31.3 per cent was improved, grade 3, and that of 10.9 per cent was improved, grade 4. There was a mortality rate, both immediate and remote, of 9.3 per cent. The three postoperative deaths made an operative mortality of 4.7 per cent. Further analysis of the cases revealed that there was very slight relationship between the severity of the disease and the degree of improvement. The results were influenced by the wearing of an elastic supporting stocking of some sort. Some form of supporting bandage must be worn after operation. Improvement was found in 72.5 per cent of those cases in which the patients were known to be wearing a bandage after operation, whereas the condition was improved in only 40 per cent of those cases in which a bandage was not worn. The relative incidence of infection before and after operation showed marked improvement. Of twenty-six cases in which the patients were suffering from recurrent attacks of infection of some sort, in only six was the infection worse or unchanged, whereas in nine it was much improved and in eleven it had completely disappeared.

Wisconsin Medical Journal, Madison

34: 369-440 (June) 1935

Early Diagnosis and Treatment of Pyelitis of Pregnancy. J. W. Harris, Madison.—p. 379.
Coronary Thrombosis and Its Sequels. W. M. Jermain, Milwaukee.—p. 381.
The Heart in Surgery. A. J. Patek, Milwaukee.—p. 386.
Prostatic Resection. H. L. Kretschmer, Chicago.—p. 390.
Common Infections of Urinary Tract and Their Treatment. J. C. Sargent, Milwaukee.—p. 395.
Genito-Urinary Tuberculosis. G. J. Thomas, Minneapolis, and T. J. Kinsella, Oak Terrace, Minn.—p. 398.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Disease in Childhood, London

10: 125-210 (June) 1935

Infective Reticulo-Endotheliosis Chiefly Localized in Lungs, Bone Marrow and Thymus. S. van Creveld and F. H. Ter Poorten.—p. 125.
Gastric Secretion in Anemia. J. W. Ogilvie.—p. 143.
*Celiac Disease Showing Unusual Features Successfully Treated with Insulin and Glucose: Case. B. Schlesinger and K. D. Keele.—p. 149.
Remarks on Heredity in Relation to Tuberculosis. G. G. Kayne.—p. 157.
Statistical Study of Nocturnal Enuresis. Robina S. Addis.—p. 169.
*Gastromegaly from Arteriomesenteric Compression of Duodenum in the New-Born. R. Miller and H. C. Gage.—p. 179.
*Early Anemia of Premature Infants: Hemoglobin Level of Immature Babies in First Half Year of Life and Effect During First Three Months of Blood Injections and Iron Therapy. Helen M. M. Mackay.—p. 195.

Celiac Disease Treated with Insulin and Dextrose.—Schlesinger and Keele present a case of clinically typical severe celiac disease with rickets and symmetrical fractures. Fat analysis of the stools was normal. The cause of the disorder appeared to be bound up with a faulty carbohydrate metabolism. Marked clinical improvement was obtained with insulin and dextrose therapy. Progress was most clearly depicted by the increase in weight. Despite a low fat diet, ultraviolet rays, calcium and viosterol, loss of weight continued steadily for eight weeks, amounting to 3 pounds 12 ounces (1,700 Gm.). When insulin and dextrose therapy (insulin 3 units, dextrose 1.5 Gm. twice daily) was begun immediate improvement was noticed, with a gain of 4 pounds 12 ounces (2,155 Gm.) in seven weeks. Two control periods are consistent with the fact that this gain in weight was due to the treatment. The gain in weight was accompanied by general clinical improvement, and the whole mental outlook became brighter. The stools were less frequent, firmer and no longer offensive. Their total fat content remained normal. At the same time the blood phosphorus rose to 6.4 mg. per hundred cubic centimeters. Estimation of the blood sugar no longer showed a flat curve but a more normal rise of 30 mg. per hundred cubic centimeters. The bearing of this and other similar cases in the literature on the etiology of the disease is discussed. A tentative suggestion is made that a significant part is played by a disordered endocrine system.

Gastromegaly from Arteriomesenteric Compression of Duodenum.—Miller and Gage discuss three cases of chronic duodenal ileus from arteriomesenteric compression in new-born infants and submit the evidence on which the diagnosis is based. The chief clinical features of the syndrome consist of the enlarged stomach (gastromegaly) causing protrusion of the upper abdomen and showing occasional visible peristalsis, and vomiting of the obstructive type, the vomitus being profuse, projected and containing mucus. Alternatively, refusal of food may keep the vomiting in abeyance for the time being. Roentgen examination will demonstrate the presence of obstruction in mild cases, and in the severe ones it will distinguish between complete and incomplete obstruction. It easily excludes any form of pyloric obstruction and, especially in oblique views, may demonstrate duodenal stasis. The opaque meal should be given directly after gastric lavage and should be considerably larger than the normal for the age to allow for the enlargement of the stomach. Medical treatment, chiefly by means of gastric lavage, is capable of restoring the tone of the distended stomach, so that satisfactory progress is possible in spite of the persistence of some degree of duodenal obstruction. It is urged that, when symptoms suggesting duodenal stenosis or atresia are found to arise from an incomplete duodenal obstruction, the possibility of duodenal ileus should be considered and a brief trial made of medical measures before submitting the infant to the extreme risk of an abdominal operation. In exceptional cases, in which gross megaduodenum is present, operation is probably essential; but in the type described here there is no possibility of the performance of duodenojejunostomy.

Early Anemia of Premature Infants.—Mackay found in twelve premature infants a loss in the total solids of the blood in the second month of life, which reached its maximum in the third month with a parallel decrease in red cells and hemo-

globin. There was not, however, any alteration in the weight curves to indicate water retention. From Sanpaolesi's work presumably a loss of solid elements must be supposed rather than an increase of fluid in the third month of life, or else a change in the relative amount of water in the circulation and in the tissues. If there is a loss from the body of solid elements of the blood without change in the blood volume, the low blood cell counts would still indicate that the total number of corpuscles in circulation in the body is subnormal. No definite knowledge exists at the present time of the cause of edema in new-born babies, though excessive cooling of the body appears to predispose to this condition.

British Journal of Radiology, London

8: 339-402 (June) 1935

Quality of High Voltage Radiations: I. W. V. Mayneord and J. E. Roberts.—p. 341.
*Constitutional Effects of X-Rays as Determined by Blood Serum Tests. S. G. Scott and F. Hernaman-Johnson.—p. 365.
Speedier Production of Finished Radiograph. A. E. Barclay.—p. 373.
Radium Dosage Calculator. H. S. Souttar.—p. 385.
Peroral Pyelography: Note. H. Morris.—p. 393.
Report Concerning Effect of Radium Chloride Injections. W. Altschul.—p. 396.

Effects of X-Rays as Determined by Blood Serum Tests.—Scott and Hernaman-Johnson point out that the vanadic acid test carried out in apparently healthy people gives results of sufficient constancy to establish a norm. The vanadic acid sedimentation test is the outcome of the work of Bendien, Lowe and Coke. Ortho vanadic acid has the property of causing a precipitate in blood serum. Within certain limits, the amount of the precipitate is determined by the acidity of the vanadic solution that is added. When the vanadic acid test varies from the normal, variations in the "green field" appear to be a measure of resistance to disease, whereas the red field measures toxicity. Although the test is nonspecific, the graph affords a great deal of useful information when the disease is already known. When the test is positive in certain diseases, it can be brought back to normal by suitable wide field roentgen therapy. Examples have been given in cases of asthma, spondylitis and breast cancer. The use of the test is not limited to the control of roentgen therapy. In cancer, for instance, the favorable alteration in the graphs may be shown as a result of treatment of another kind, such as the injection of colloidal selenium. While the local effects of x-rays will always be of importance, the time has come when it should be realized that x-radiation is also a powerful drug, having a pharmacology and therapeutics of its own, which will repay the closest study.

British Medical Journal, London

1: 1157-1204 (June 8) 1935

Abdominal Pain in Children. A. R. Short.—p. 1157.
Cortical Mastoid Operation: Analysis of Ninety-One Cases. R. Salkeld.—p. 1160.
Bacillary Dysentery: Summary of Treatment with Brief Statistics of Epidemic. H. W. Corner.—p. 1162.
Rupture of Popliteal Artery and Vein. W. A. Steel.—p. 1165.
Meckel's Diverticulum. D. P. MacGuire.—p. 1167.
Benedict's Qualitative Test: Further Modification Suitable for Estimation of Urine Glucose in Ward or Side Room. J. Fine.—p. 1169.

1: 1205-1250 (June 15) 1935

Psychotherapeutic Clinics in Fact and Fancy. H. Crichton-Miller.—p. 1205.
*Observations on Absorption of Carotene and Vitamin A. J. C. Drummond, Muriel E. Bell and Elizabeth T. Palmer.—p. 1208.
Chylothorax: Case. Muriel E. Bell.—p. 1211.
*Tuberculin in Treatment of Cutaneous Tuberculosis. H. S. Burnell-Jones.—p. 1212.
Intussusception in Adult Due to Tumors: Note on Five Cases. E. N. MacDermott.—p. 1214.
Ulcerations in Stomach After Adrenalectomy. J. Freud, D. Luwisch and F. Oestreicher.—p. 1216.

Observations on Absorption of Carotene and Vitamin A.—Drummond and his collaborators investigated the absorption of vitamin A and carotene administered to a patient suffering from a condition which led to part of the contents of the thoracic duct being diverted into the pleural cavities. Analysis of the fluid removed at intervals from the cavities of the chest enabled approximate estimations to be made of the amount of vitamin A and carotene absorbed by way of the chyle. It was found that a relatively small proportion of the carotene administered orally could be accounted for by the pigment found in the chylous fluid, whereas in the case of vitamin A the amount recovered was such as to indicate an almost complete absorption. The vitamin administered as the free alcohol was found present in the lymph mainly in the esterified condition, and it is thought probable that the linkage with the fatty acids during passage through the intestinal walls accounts for the much higher coefficient of absorption as compared with that found when carotene was given. Observations on the chylous fluid show that over a range of reaction much wider than that encountered in body fluids no trace either of carotene or of vitamin A passed a dialyzing membrane. Both compounds appeared to be present in colloidal form and closely associated with the highly dispersed fat.

Tuberculin in Treatment of Cutaneous Tuberculosis.—Burnell-Jones presents three cases of cutaneous tuberculosis treated with tuberculin. Each case is a law unto itself with regard to intervals between injections, increase and decrease of dose and the change of tuberculin, and clinical insight and experience have to be depended on. The arrest of disease and the improvement seen in these cases are strong indications that the work should be continued. In one of the earlier cases (not recorded) treatment was given for seven months before any change in the lesions could be seen. The author has heard a practitioner condemn tuberculin after using it in one case for only three months. All the cases treated were of long duration before tuberculin was given. One patient, notwithstanding the fact that allergy was marked, continued to improve with small doses. The author employs large doses only if the patient tolerates them without a rise of temperature or unpleasant general reaction. This tolerance varies. One patient will sometimes feel ill after 0.1 cc., whereas another will feel no discomfort after 1.6 cc. Increase of weight almost invariably accompanies the administration of tuberculin. Sooner or later one finds that the improvement is not as rapid as at first. This the author assumes to be a sign for temporary suspension of treatment or for extension of the interval: in any case it behooves caution. It does not occur when any particular dose has been reached. Attention is called to the remarkable differences in the blood films one finds in the different types of cutaneous cases, and it is suggested that workers should do monthly differential blood counts in each case.

Glasgow Medical Journal

5: 329-404 (June) 1935

*The Common Cold: Survey of Recent Work. C. H. Browning.—p. 329.
Some Observations on Physicotherapy in Treatment of Fibrositis and Other Rheumatic Conditions. J. C. Alexander.—p. 350.
Incidence of Positive Wassermann Reactions in General Medicine. J. Carslaw.—p. 359.

The Common Cold.—Browning in his summary of the causation of the common cold states that: 1. The common cold is, at least in some instances, due to an agent which is not habitually harbored by those attacked. This is proved by the outbreak of epidemics in isolated communities on the occasion of the first visit of strangers after an interval of no communication. 2. Evidence that an infective agent of the filter passing type is responsible is furnished by the transmission of colds to quarantined human subjects and chimpanzees by the intranasal instillation of sterile filtrates of the nasal secretions of persons in the early stage of colds. The causal agent can survive for a considerable period outside the body and is capable of proliferation in culture medium in vitro. 3. It is not determined whether the ordinary pathogenic bacteria which may occur in the upper respiratory tract are ever by themselves the causal agent of coryza, although there is no doubt that as superadded infections they are important in aggravating the condition and especially in bringing about complications. 4. The incidence of colds is to a great extent independent of climate but has some relation to weather. Thus, a sudden fall in temperature tends to be followed by an outbreak, owing in all probability to a lowering of resistance of the tissues. Nothing is known regarding factors that may influence the virulence of the causal agents. 5. There is little or no evidence that the incidence of colds in a community is related to the general habits of living of its individual members.

Journal of Laryngology and Otology, London

50: 389-492 (June) 1935

Ventilation of Nose and Accessory Sinuses: Oscillograph Method of Investigation. J. F. O'Malley.—p. 389.

Journal Obst. & Gynaec. of Brit. Empire, Manchester

42: 409-576 (June) 1935

Therapeutics with Ovarian Hormones. C. Kaufmann.—p. 409.

*Some Causes of Puerperal Mortality and Morbidity, and Methods of Prophylaxis Suggested for the Treatment of Puerperal Sepsis and Puerperal Pyrexia: Analysis of Series of Eight Thousand One Hundred and Eighty-Nine Cases of Confinement and Abortion, Treated in the County of Lanark Maternity Hospital, Bellshill, for the Years 1927 to 1934. H. J. Thomson.—p. 434.

Prevention of Prolapse of Uterus and Vaginal Walls Following Childbirth. Margaret Salmond, in conjunction with Gertrude Dearnley.—p. 446.

Treatment of Postpartum Hemorrhage Due to Atony. P. Salacz.—p. 476.

Note on Five Pelves of Women of the Eleventh Dynasty in Egypt. D. E. Derry.—p. 490.

Puerperal Mortality and Morbidity.—Thomson states that perineal lacerations account for 7 per cent of the morbid conditions. An open wound is fraught with danger of infection in any part of the body, but such a danger is markedly increased when the wound is in the neighborhood of the vagina or rectum. Delay in the repair of a perineal laceration allows the germs a sufficient time to gain entrance to the blood stream and, if the tissues are not sutured immediately, healing and repair do not necessarily occur. The toxemias of pregnancy render the tissues unhealthy. The untimely use of the forceps, which may result in laceration of the soft parts, hemorrhage and exhaustion after a prolonged labor, is provocative of puerperal sepsis and pyrexia. Vaginal intervention should be avoided as much as possible. In hospital work it is a great advantage to divide the clean from the suspect case. Patients suffering from pyelitis are often admitted to the hospital before their confinement in the same ward as the clean antepartum cases, and it is certain that Bacillus coli, most often the cause of pyelitis in pregnancy, accounts for a percentage of the local and general serious infections of the puerperium. Other possible sources of infection are a baby with a discharge from the eyes, septic spots on its skin, nasal discharges and a septic umbilical cord. Babies included in these categories are not allowed to be fed by the breast until the evidences of sepsis disappear. If the clean cases were warded in one part of the hospital and the suspect cases were segregated and warded as doubtful and certain sources of infection, much of the puerperal sepsis in the hospital would disappear. The chief causative agent of puerperal sepsis, the streptococcus, may come from the patient herself. In the majority of cases the source of the infection is due to a discharge from the nose or throat of the attendant or patient when they cough or sneeze. Other sources are boils, abscesses, carriers of Streptococcus haemolyticus and the unnecessary routine vaginal examinations made during normal labor. A chronic infection of the pelvis, lighted up during labor and giving rise to acute symptoms, may lead to the death of the patient. Aerial disinfection is worthy of consideration. Puerperal antitoxin occupies a definite place among the preventive measures of puerperal sepsis. The use of acriflavine is limited to swabbing the skin round the vulva. Its use is satisfactory, especially when combined with ethereal soap 1:500. The administration of calcium sulphide in a group of 1,421 cases, including many complicated, gives a pyrexial rate (when cases febrile on admission are excluded) of approximately 3.5 per thousand, an irreducible minimum. Asepsis should be the routine practice, not antisepsis.

Lancet, London

1: 1313-1368 (June 8) 1935

Late Results of Operative Treatment of Osteo-Arthritis of Hip Joint. C. M. Page.—p. 1313.

Pyrexia of Obscure Origin. A. H. Douthwaite.—p. 1320.

*Epidemic Pemphigus of the New-Born (Impetigo Contagiosa et Bullosa Neonatorum). W. H. Poole and C. H. Whittle.—p. 1323.

Effect of High Protein Diet on Arterial Pressure in Cases of Hypertony. I. Harris, C. N. Aldred and A. G. H. English.—p. 1327.

Epidemic Pemphigus of the New-Born.—Poole and Whittle aver that pemphigus of the new-born may occur either in endemic or in epidemic form; the latter variety has been rare until comparatively recently but is now beginning to constitute a serious hospital problem. The disease may take various forms, the lesions being essentially vesicular. Its bacteriology, pathology, sources of infection, onset, course and symptoms, differential diagnosis and prognosis are discussed. The treatment falls into three phases: prevention, control of epidemics and treatment of cases. Prevention depends on infants not being handled by any one who is suffering from or in contact with an infective condition, and on scrupulous obstetric cleanliness and a rigorous nursing technic. In treatment of the actual cases the most satisfactory results are obtained by frequent cleansing with a mild antiseptic, followed by a dry dressing. Gregorson reports good results from repeated exposure to ultraviolet radiation, while Cole and Ruh think that the use of an autogenous vaccine is beneficial. Simpler measures are equally effective. In the Cambridge epidemic the cases were all isolated in a "septic ward"; special nurses, who did not attend other cases, were responsible for the dressings, which were renewed every four hours by day and once during the night; if the dressings became soiled by excreta, they were changed at once. Whenever the skin was dressed, all unbroken blisters were pricked with a sterile needle. In all cases the babies' arms were splinted to prevent the spread of infection by scratching.

1: 1369-1426 (June 15) 1935

Further Observations on Lung Abscesses and Their Treatment. A. J. S. Pinchin and H. V. Morlock.—p. 1369.

Stricture of External Urinary Meatus. A. R. Thompson.—p. 1373.

Diagnosis of Abnormal Hip Conditions in Children. M. Forrester-Brown.—p. 1377.

*Induced Water Retention in Diagnosis of Idiopathic Epilepsy. J. L. Clegg and F. T. Thorpe.—p. 1381.

Blood Chemistry in Epilepsy: Note. R. T. Fletcher and Olive D. Peden.—p. 1382.

Atypical Muscle Strain. P. Bauwens and J. K. McConnel.—p. 1384.

Tonsil and Adenoid Operation: Reasons for Reversal of Usual Order of Removal of Tonsils Before Adenoids. D. F. A. Neilson.—p. 1387.

Induced Water Retention in Diagnosis of Epilepsy.—Clegg and Thorpe repeated Jacobsen's procedure of differential diagnosis between idiopathic epilepsy and hysteria, administering large quantities of water by the mouth, accompanied by hypodermic injections of pitressin in sixteen adult epileptic subjects and seven nonepileptic controls. Their object has been to confirm his results, or otherwise, and further to see whether any changes in the osmotic pressure of the blood accompany the water retention. Pallor followed the administration of pitressin in each case; it usually became noticeable about five minutes after injection and lasted up to two hours. It was accompanied by slowing of the pulse, but there was no marked alteration in the blood pressure. After two or three injections the action of the drug on the intestinal muscle was shown by slight looseness of the stools. In all the cases the excretion of urine was diminished, and in one patient suffering from chronic nephritis considerable edema of the ankles and face was produced. Edema constitutes a definite contraindication to the carrying out of the test. There was a progressive increase in the body weight during the administration of pitressin and water, with a definite drop when it was discontinued. The excretion of urine was affected conversely. A fit occurred after the weight had increased by 4 pounds (1.8 Kg.). Of the sixteen epileptic patients tested, twelve had one or more fits during the administration of pitressin in combination with water. In two of the four negative cases, the test had to be discontinued because of hiccup and vomiting. The other two were both cases in which the fits were normally infrequent. In none of the seven controls was a fit induced by pitressin and water, and in none of the epileptic subjects to whom water or pitressin was administered alone.

Medical Journal of Australia, Sydney

1: 671-700 (June 1) 1935

Immunization Against Diphtheria and Scarlet Fever. Hilda Bull.—p. 671.

Hypochlorites as Antiseptics. H. S. Stacy and H. S. H. Wardlaw.—p. 682.

Some Aspects of Medical Curriculum of the University of Sydney Through Eyes of Recent Graduate. I. I. Brodsky.—p. 684.

Archives des Maladies de l'Appareil Digestif, Paris

25: 553-664 (June) 1935

Roentgenologic Study of Colon of Normal Man. N. Fiessinger and G. Hutet.—p. 553.
False Colitis. F. Gallart-Monès.—p. 563.
Spontaneous Hypoglycemia in Diabetic Patient: Case. L. Szyfman and J. Wajnsztok.—p. 571.
*Santonin Test in Diagnosis of Hepatic Insufficiency. F. Fernandez.—p. 576.

Santonin Test in Hepatic Insufficiency.—Fernandez discusses the evaluation of the liver's detoxifying function. Santonin can be utilized to test the capacity of the liver to retain or eliminate foreign substances. It is insoluble in water and, administered by mouth, is dissolved in the intestine, rapidly absorbed, transported to the liver, where it is transformed into a similar substance (oxysantonin), and eliminated by the kidney. To test this process it was necessary to prepare standards. For this purpose 5 cc. of a 1 per cent alcoholic solution of eosin was prepared, to which 5 cc. of distilled water was added. This constitutes the "mother solution." Six tubes, each containing 5 cc. of distilled water, were placed on a rack. Twenty-five drops of the mother solution was added to the first tube, fifteen to the second and five to the third. Five drops of the mother solution was added to 5 cc. of distilled water and fifty drops of the latter added to the fourth tube, ten to the fifth and three to the sixth. The fasting patient is given 0.03 Gm. of santonin in a wafer and a glass of water. The patient urinates at this time and each hour for the succeeding eight or ten hours. Three cubic centimeters of each micturition is placed in a tube of the same caliber as that of the standards. Two cubic centimeters of lye of a 36 degree Beaumé density, diluted with an equal amount of distilled water, is added to each specimen. The yellow, slightly reddish color becomes readily visible. This is compared with the standards and the number noted. The patient should drink water frequently to increase the diuresis, since the concentration of the urine does not appear to influence the test. In normal persons the elimination of santonin begins at the end of one hour, increases progressively during three or four hours and then diminishes until the seventh or the eighth hour. When the test is compared in normal persons and various types of hepatic insufficiency, the curve is normal if the elimination of santonin is neither too early nor too late, too brief or too long, too high or too low. Intermittent elimination seems a definite proof of functional liver deficiency.

Presse Médicale, Paris

43: 937-960 (June 12) 1935

Treatment of Varices. P. Alglave.—p. 937.
Macrogenitosomal Gynandrism: Case. E. Sorrel and Mme. Sorrel-Dejerine.—p. 942.
*Contralateral Pneumothorax. Tobé, Degeorges, Salmon and Joly.—p. 946.
Physiopathology of Cerebral Hemorrhages. D. Paulian and I. Bistriceano.—p. 951.
Anal Fistulas. R. Kaufmann.—p. 954.

Contralateral Pneumothorax.—Tobé and his collaborators have had their attention called to the favorable contralateral action in certain cases of pneumothorax. Their observations can be divided into three groups. In some instances in which the creation of a double pneumothorax was considered, the collapse of one lung was followed by a sufficiently satisfactory contralateral improvement so that the second pneumothorax was unnecessary. In some cases in which it was necessary to maintain a pneumothorax in extreme expansion, they noted an unexpected improvement of the contralateral lesions. Thirdly, in a case of spontaneous pneumothorax developing in the course of a serious bilateral form which seemed beyond the resources of collapse therapy, the contralateral lesions became improved in an unhoped for manner. The authors believe that a contralateral action can be sought in the presence of (1) bilateral lesions with a free pleura, (2) bilateral lesions when narrow adhesions make pneumothorax impracticable on the side of the most menacing lesions, and (3) lesions practically unilateral in which adhesions prevent homolateral pneumothorax. When these criteria are fulfilled and contralateral action is expected, the authors insist on the necessity of maintaining a negative pressure in the pneumothorax, the terminal expiratory pressure remaining definitely lower than the atmospheric.

Archivio Italiano di Chirurgia, Bologna

39: 701-858 (April) 1935

Pathogenesis of Gastric Ulcer: Experiments. R. Palma.—p. 701.
Consequences of Total Obstruction of Femoral Artery: Experiments. V. Bernabeo and L. Novara.—p. 731.
Posttraumatic Thrombosis of Internal Carotid Artery: Case. T. Greco.—p. 757.
*Calcification of Gallbladder (Porcelain Gallbladder): Case. G. Scoppetta.—p. 785.
Anastomosis of Common Carotid and Subclavian Arteries: Experiments. D. Lioy.—p. 797.

Calcification of Gallbladder.—Scoppetta reports a case of complete calcification of the gallbladder in a woman, aged 62, who showed no biliary symptoms of either objective or subjective character. The patient was apparently in normal health, except for the presence of a laparocele. The diagnosis of calcified gallbladder was made during the roentgen examination of the gastro-intestinal tract in connection with the presence of the laparocele. A cholecystectomy was performed. The author believes that the diffuse calcification of the gallbladder that results in the formation of the "porcelain gallbladder" originates in an inflammatory process of long duration and spontaneous regression in the gallbladder. This hypothesis seems to be confirmed by the pathogenic mechanism of calcification of the pleura and the pericardium. The condition may follow an evolution without symptoms. The roentgen diagnosis of calcified gallbladder is an indication for cholecystectomy.

Anales de Medicina Interna, Madrid

4: 507-599 (June) 1935

Multiple Lipomatosis, Painful on Pressure: Case. A. del Cañizo and L. F. Pallardo.—p. 507.
Treatment of Addison's Disease by Sodium Chloride, Oral Route. G. Marañón, J. A. Collazo, J. Gimena and J. Barbudo.—p. 519.
Chronic Meningitis with Acute Recurrences and Subarachnoidal Eosinophilia Due to Cysticercosis of Neuraxis: Case. W. López Albo, A. Feijóo and M. Marin.—p. 533.
Syringomyelia and Intramedullary Glioma: Cases. R. Bueno.—p. 543.
*Sensitivity of Skin to Tuberculin. T. Cerviá, J. Pérez and J. Garcia López.—p. 557.
Dynamic Specific Action to Proteins. M. Carmena.—p. 577.

Sensitivity of Skin to Tuberculin.—Cerviá and his collaborators say that the theories for the interpretation of the internal mechanism of the skin reaction to tuberculin are not unanimous. In twenty-nine patients suffering from pulmonary tuberculosis, the authors performed intradermal reactions with (1) physiologic solution of sodium chloride, (2) a nonspecific protein, (3) old tuberculin and (4) a mixture of old tuberculin and epinephrine. The authors conclude from a comparative study of the morphology of the papules and of the focal hematologic formula of the papules that a relation between the velocity of the reabsorption of the skin and the sensitivity to tuberculin cannot be proved. When the mixture of tuberculin-epinephrine is used in the test, the sensitivity of the skin to tuberculin decreases and the reaction lasts longer than when tuberculin alone is used. The intradermal reaction to tuberculin is specific. There is a relation between the hematologic formula of the tuberculin papule and that of the peripheral blood. The focal lymphocytosis in the tuberculin papule is the manifestation of the condition of general allergy in tuberculous patients.

Deutsches Archiv für klinische Medizin, Berlin

177: 573-690 (June 15) 1935

Chemical Studies on Human Hearts. H. Wassermeyer.—p. 573.
Clinical Aspects of Disorders of Adrenals. W. Nagel.—p. 600.
*Tumor of Hypophyseal Infundibulum with Galactorrhea: Further Contribution to Hypophyseodiencephalic Syndrome. F. Salus.—p. 614.
Clinical Observations on Dynamics of Descending Urinary Passages by Moving Roentgenography (Urokymogram). G. Holland, G. M. Sack and G. Wüllenweber.—p. 624.
*Clinical Aspects and Pathogenesis of Nicotine Poisoning. S. Genkin, D. Piskarew, B. Serebrjanik and S. Braun.—p. 642.
Beat and Minute Volume in Mitral Defects. I. Oettinger and I. Masel.—p. 661.
Various Forms of Aseptic Inflammation of Meninges. A. H. Müller and H. Klan.—p. 672.

Tumor of Hypophyseal Infundibulum.—Salus reports the history of a woman, aged 28, who became amenorrheal, gained rapidly in weight (20 Kg.), developed morbid sleepiness and complained of headache and vomiting. There was a lactating mammary gland. After about three months, visual distur-

bances developed. The woman complained of a glittering sensation and of seeing fiery wheels. She also developed polydipsia. Tests revealed a tendency to retain water and sodium chloride. The basal metabolism was reduced (—40) and the specific dynamic protein action was absent. In the beginning of the clinical observation there existed multiple paracentral scotomas and later there was choked disk and hemianopia. The patient died several days after a surgical intervention. The necropsy disclosed a tumor the size of a walnut in the hypophyseal infundibulum. The tumor compressed the optical tracts and had destroyed the floor of the diencephalon. The hypophysis was enlarged, the anterior lobe showing diffuse hyperplasia. The adrenals were unusually large and rich in lipoid, and the ovaries were atrophic. The author discusses the different symptoms, giving especial attention to the pathogenesis of the galactorrhea. He thinks that in this patient it was caused by hypophyseal changes. Then he points out that the concurrence of obesity and morbid sleepiness is a characteristic diencephalic syndrome and shows that recent studies have disclosed that the central regulation of the metabolism is localized in this area.

Nicotine Poisoning.—Genkin and his associates made studies on fifty-five workers (forty-one men and fourteen women), who extracted nicotine and nicotine sulphate from tobacco leaves and some of whom developed symptoms of acute poisoning. The pathologic manifestations developing under the influence of repeated small doses of nicotine belong chiefly to the sphere of the vegetative nervous system. Many of the symptoms are manifestations of the irritation of the parasympathetic, such as bradycardia, arrhythmia, hyperacidity, spasms of the smooth muscles, excessive salivation, and sweating. Another group of symptoms indicates disturbances in the sympathetic. To this group belong vascular manifestations of an angiospastic character in the lower extremities, tremor and so on. General cerebral symptoms are the result of disturbances in the blood perfusion of the brain. Symptoms such as sleep disturbances, loss of memory and neurotic manifestations are caused by the direct toxic action of the nicotine on the central nervous system. The most frequent symptom and thus the one that is most important for the diagnosis of nicotine poisoning is bradycardia. It may appear also outside the acute intoxications. The authors think that it is not so much the result of a central action of the toxin as of the influence the toxin exerts on the nerve cells of the vagus (in the system of the intracardial ganglions). The pupillary reactions likewise seem to have diagnostic significance. The authors observed in a considerable number of their patients either contraction of the pupils or a slowness of reaction.

Deutsche medizinische Wochenschrift, Leipzig

61: 1025-1064 (June 28) 1935. Partial Index

*Severe Electrocardiographic Disturbances in Diphtheria and Their Prognosis. H. Frank.—p. 1025.
*Chronic Polyarthritis During Age of Growth and Central Nervous System. V. Schaefer.—p. 1030.
Glossoptosis in Micrognathia. G. Ullrich.—p. 1033.
Experimental Studies on Histology of Thyroid and Hypophysis in Castration Obesity. K. W. Schultze.—p. 1041.
Intra-Uterine Infection in Tuberculosis. E. Loewenstein.—p. 1043.

Electrocardiographic Disturbances in Diphtheria.—Frank shows that, in addition to the polyneuritic, the cardiac disturbances predominate in so-called toxic diphtheria. The majority of fatalities that occur in this form of diphtheria are the result of cardiac and circulatory disturbances. The author analyzes the symptomatology of the children who died as the result of severe cardiac and circulatory disturbances. He reports nine cases of diphtheria in children who had severe disturbances of the cardiac conduction system and eight cases in which the electrocardiogram indicated severe impairment of the myocardium. The prognosis is unfavorable. The clinical aspects permit no definite evaluation of the extent of the impairment; the electrocardiogram provides a better insight into the severity of the disturbances. All the children in whom the cardiac conduction was greatly impaired died. The author rejects the theory ascribing early death in diphtheria primarily to the circulation, for he maintains that electrocardiographic changes are found quite frequently in the early fatalities, and he thinks that those patients in whom they were not demonstrable did not live long enough. In this connection he points out that in cardiac infarct the electrocardiographic changes appear frequently from one to three days after the clinical event. However, the circulatory disturbances do play a part in the early fatalities. In the treatment of the circulatory disturbance and of the toxic impairment of the heart, he saw the best results following the combined application of epinephrine and strophanthin and of the various restoratives, but he admits that, once the myocardial impairment has developed, treatment is of little avail. He maintains that prophylaxis in the form of early serotherapy is the most effective treatment. The early administration of the serum is more important than the size of the dose.

Chronic Polyarthritis During Age of Growth.—Schaefer asserts that the thought of a causal relationship between acute and chronic polyarthritis and the central nervous system is not entirely new, for it was discussed during the last century. It was given up during the bacteriologic era in spite of the fact that a causal agent could not be found. The author made observations on ten patients, all young persons, and describes the histories of four of these who had systemic disorders and in whom increasing stiffening of the joints and dwarfism, especially of the extremities, were the most noticeable symptoms. In some of these cases the central nervous system is involved. This is indicated by the mental disturbances and by the peculiar physiognomy. Many of the patients were mentally deficient, for there were retarded intellectual development and deficiencies in the emotional life. They were irritable, hypochondriac and melancholic. The severest mental disturbances did not always concur with the articular pains but frequently appeared also during the interval. The hypochondriac moods often appeared several weeks or even months before the articular disturbances. The peculiar masklike physiognomy of the patients resembles greatly that observed following epidemic encephalitis and during parkinsonism. This is a further proof that the brain is the site of origin of the disorder, the more so since deforming articular changes have been observed as sequels of epidemic encephalitis. The symmetry of the articular disturbances is another factor indicating the neurocentral origin of the disorder. The author shows that the patients presented a number of other disorders of central origin. He mentions sclerodermia, excessive sweating and hypersecretion of the sebaceous glands. Moreover, the trophic disturbances in the muscles cannot be explained by the dysfunction of the joints, for they frequently precede the articular disturbances. The author thinks that the muscular atrophy is like the other symptoms of central origin. He concludes that the articular disturbances are not the primary factor but that the condition is a systemic disease the various symptoms of which are of central nervous origin.

Jahrbuch für Kinderheilkunde, Berlin

144: 311-370 (June) 1935

*Protein Deficient Fruit-Vegetable Diet in Children with Diabetes Mellitus. G. Fanconi.—p. 311.
Diphtheria in Chemnitz 1924 to 1932. R. Kochmann and G. Steinbach.—p. 334.
Measles with Cerebral Complications: Two Cases. H. Zischinsky.—p. 353.
Cured Agranulocytosis During Nursling Age. S. Wolff.—p. 357.

Protein Deficient Fruit-Vegetable Diet in Diabetes.—Fanconi reaches the conclusion that the protein deficient fruit-vegetable diet constitutes progress in the treatment of diabetes mellitus in children. If a diabetic child is brought to the hospital in a comatose or precomatose state or with a high acetone and sugar elimination, medication with stimulants, particularly caffeine, brandy and metrazol, is resorted to and fluid (alkaline mineral water) is given in large quantities. If the child is comatose, the fluid is administered subcutaneously or intravenously. After several hours, orange juice is given in increasing quantities up to 400 Gm. each day. Depending on the age of the child, from 10 to 20 units of insulin is administered and the injection is repeated after two or four hour intervals until the comatose symptoms have disappeared or until the urine has become free from sugar. Then the child is given only fruit for from two to three days. Beginning with the fourth or fifth day, steamed and raw vegetables prepared with butter or oil are added and, after another two to four days, from one to two egg yolks, from 100 to 400 Gm. of almond milk or from

30 to 100 Gm. of cream in coffee or tea are added. Later, from 10 to 50 Gm. of nuts may be added and eventually a small amount of bacon. Soon after that, from 30 to 100 Gm. of potatoes and from 20 to 50 Gm. of graham or whole grain bread may be added and, with that, the protein deficient fruit-vegetable diet is complete and may be continued for years. The daily minimum of carbohydrates is 100 Gm. If with such an amount the child is not free from glycosuria, insulin is given. Because of a perhaps unfounded fear of chronic protein hunger, the author gives his patients once or twice a week from 30 to 100 Gm. of calf's liver, fish or meat. However, this is done only after the blood and urine have become normal because, if given before this, the meat may cause a sudden increase in the sugar content of blood and urine. Exclusive fruit days are intercalated from time to time, when sugar and acetone reappear in the urine. The protein deficient fruit and vegetable diet rapidly increases the carbohydrate tolerance and soon makes the use of insulin superfluous. Moreover, the diabetic children like this diet better than the former strict diets.

Klinische Wochenschrift, Berlin

14: 913-944 (June 29) 1935. Partial Index

Action of Sulphur on Bone Marrow. A. H. Müller.—p. 917.
*Are There Complications After Injection of Salyrgan? G. W. Parade.—p. 918.
Cevitamic Acid—Other Vitamins and Blood Catalase. G. Török and L. Neufeld.—p. 919.
Angina Pectoris in Severe Anemias. O. Zimmermann.—p. 922.
*"Methemoglobin Test" for Determination of Antianemic Action of Liver Extracts. J. F. Wilkinson and W. Deutsch.—p. 926.
Unilateral Dorsal Reflexes in Duodenal and Gastric Ulcer. F. Oefelein.—p. 928.

The Injection of Salyrgan.—Parade considers that excellent diuretic action of salyrgan has been established beyond a doubt. He thinks that more or less severe complications which may follow the administration of salyrgan are not sufficient reason to dispense with the preparation. However, he demands that this medicament be employed in cases of heart disease only if a suitable digitalis and strophanthin therapy, eventually together with diuretics, has not succeeded in counteracting the decompensation and the edemas. He says that several years ago he pointed out that the too sudden elimination of severe edemas in patients with certain types of heart disease may eventually produce severe cardiac disturbances. He reports a case in which threatening symptoms developed following the injection of salyrgan. The severe cardiac disturbances were recorded by the electrocardiograph. The patient apparently had an aortic and coronary sclerosis, which probably had produced degenerative changes before the attack. An injection of salyrgan, preceded by the treatment with small doses of strophanthin, was followed by a severe tachyarrhythmia accompanied by threatening general symptoms (vomiting, debility and collapse). It is probable that during the attack there developed disorders in the blood perfusion of the myocardium, for the temporary appearance of a "coronary" T wave (in lead 3) seems to indicate this. The author concludes that, in cases of coronary disease in which myodegenerative processes exist, extreme caution is necessary in the use of salyrgan. If its administration becomes absolutely necessary in such cases, a small trial dose (0.5 cc. intramuscularly) should be given first.

"Methemoglobin Test" for Determination of Antianemic Action of Liver Extracts.—Wilkinson and Deutsch call attention to the fact that, in order to replace the clinical test method for which uncomplicated cases of pernicious anemia during the stage of relapse are required, attempts have been made in recent years to devise laboratory tests for the determination of the efficacy of the antianemic action of liver preparations. So far these attempts have not been entirely successful. Duesberg and Koll devised a laboratory method consisting in the spectroscopic examination of the liver extracts after they have been mixed with hemolyzed erythrocytes and kept in the incubator (38 C.) for one hour. The authors resorted to this method in the determination of the antianemic action of a number of extracts and compared the results of this method with the clinical tests. They found that there is no relationship between the hematopoietic activity revealed by the clinical test and the capacity to form methemoglobin disclosed by the spectroscopic examination. By careful heating it is possible to destroy the antianemic liver substance, but the methemoglobin-forming principle remains almost unchanged. The antianemic principle of the liver is not identical with the methemoglobin-forming factor but occurs independently. Consequently the methemoglobin test of Duesberg and Koll does not indicate the presence or absence of the antianemic action capacity of liver extracts, and the clinical test remains as yet the only reliable method for the determination of the efficacy of an extract in pernicious anemia.

Münchener medizinische Wochenschrift, Munich

82: 1021-1062 (June 28) 1935. Partial Index

*Motility Disturbances of Intestine and Their Treatment. K. Gutzeit.—p. 1021.
Treatment of Fracture of Radius. G. Magnus.—p. 1024.
Milk and Milk Products as Transmitters of Contagious Diseases in Human Subjects. W. Rimpau.—p. 1026.
Change in Prognosis and Therapy of Detachment of Retina. W. Löhlein.—p. 1029.
*Behavior of Diastase in Blood in Gastritis. K. Voit and H. Pragal.—p. 1031.
Recording of Heart Sounds and Their Reproduction by Means of Photophonic Method. G. Kayser and A. Weber.—p. 1032.

Motility Disturbances of Intestine.—According to Gutzeit the orderly motility of the intestine is the resultant of a number of interdependent as well as of independent functions. In the case of the intestine, as in that of the heart, the intramural nervous system insures an automatic motor activity that depends on its contents and its nutrition. The plurality of other influences on the motility is of a supplementary type and has the object of adapting the automatic motor activity to the changing requirements of the environment into which the organism is placed. To these influences belong all neurohumoral actions, congenital and independent, as well as acquired and conditioned reflexes, a number of promoting and restraining incretory factors, orderly ferment production that is adapted to the intestinal contents and, last but not least, the controlling action of the harmonic interrelation of the sympathetic and the parasympathetic and their dependence on superordinated cortical and subcortical psychic equilibriums. As the harmonic collaboration of all these factors and their adaptation to changed requirements insure an optimal intestinal motility, a failure of the physiologic correlations produces disturbances. The author points out that disturbances in the intestinal motility may be absent in conditions such as typhoid and dysentery in which they ordinarily develop. He thinks that this cannot be explained by the location and the extent of the inflammatory process but that compensatory mechanisms are at work and that nutritional and climatic factors may play a part; but in addition to these environmental factors there are also some within the organism. He discusses disorders of intestinal motility in various disease conditions, such as hyperthyroidism, myxedema, parathyroprivic tetany, Simmonds' cachexia, Addison's disease, sprue and other conditions, and he mentions the motility disturbances that result when certain secretions (pancreatic, biliary and gastric) are absent, or in case of dyspepsia or gastro-enteritis. Finally he discusses constipation and its treatment. He emphasizes the necessity of careful stool and roentgen examinations and shows that the treatment with purgatives and with a diet containing great amounts of roughage may exacerbate rather than improve certain forms of constipation and produce colitis.

Behavior of Diastase in Blood in Gastritis.—Voit and Pragal call attention to reports by other investigators, who found that an increase in the diastase content of the blood is not restricted to the diseases of the pancreas. On the contrary, by means of Ottenstein's procedure, which they consider more sensitive than Wohlgemuth's method, an increase in the diastase content of the blood could be detected also in other disorders. The authors decided to study the diastase content of the blood of patients with gastritis in whom there existed no clinical indications of an involvement of the pancreas. In some cases they employed the method of Wohlgemuth in addition to the Ottenstein method. They first determined in tests on normal persons that the normal diastase values vary between 120 and 200 mg. per hundred cubic centimeters. Consequently they consider as pathologic only values that exceed 200 mg. per hundred cubic centimeters. They further determined the

diastase content of the blood according to Ottenstein's method on forty-three patients in whom the symptoms of gastritis predominated and found that the diastase values are increased in most cases. They think that this makes it probable that the pancreas is involved, although there are no other clinical symptoms on the part of the pancreas.

Wiener klinische Wochenschrift, Vienna

48: 863-886 (June 28) 1935

Construction Metabolism of Malignant Tumors and Its Relation to Diagnosis and Therapy. E. Freund.—p. 863.
Crisis in Twin Pathology: Etiology of Mongolian Idiocy. A. Greil. —p. 868.
*Microdetermination of Fat in Blood Serum. G. Kien and Cornelia Wetzler-Ligeti.—p. 871.
Injection Therapy of Hemorrhoids. F. Vogel.—p. 872.
Antianemic Substances in Urine. A. Decastello.—p. 874.
Speech Disturbances in Children. E. Fröschels.—p. 874.

Microdetermination of Fat in Blood Serum.—Kien and Wetzler-Ligeti investigated the fat metabolism in various skin diseases and in the course of these studies they developed a micromethod for the determination of the fat content of the serum. For the purpose of deproteinization and the extraction of fat, 2 or 1 cc. of serum is added in drops to 8 cc. of an ether-alcohol mixture (three parts of alcohol and one part of ether) that has been placed in two centrifuge test tubes. Following a short boiling in the water bath, centrifugation is done and the clear fluid decanted into a test tube with glass stopper and evaporated. The sediment is washed three times more with the ether-alcohol mixture and each time the fluid is evaporated. After complete evaporation of the solutions a yellowish sediment remains, which contains the total amount of the fats that are extractable by the ether-alcohol method. This sediment is shaken for one minute with 2 cc. of chloroform and after that for one minute with 10 cc. of purified petroleum benzin. Then it is left to stand for ten minutes. The mixture of chloroform and petroleum benzin is put into test tubes (of the type used for blood sugar determination according to Hagedorn-Jensen) and is well shaken and evaporated until only a few drops remain. These remaining drops are absorbed by strips of filter paper about 4 or 5 cm. in length and of a width slightly less than the diameter of the Hagedorn-Jensen test tubes. The strips are fastened to a linen thread and are carefully weighed. Four strips are required for every double determination. After the contents of the test tube have been absorbed by the strips of filter paper, the tube is washed twice more with from 5 to 7 cc. of purified petroleum benzin. Evaporation is done again and the last drops are again taken up by filter paper. The strips are dried in an incubator at a temperature of 45 C. until a constant weight has been reached, which is usually the case after about thirty minutes. The increase in weight indicates in milligrams the quantity of fat contained in the amount of serum that was examined. In order to determine whether this method really detects the total quantity of fat, control tests were made with carefully weighed quantities of triolein and tripalmitin. These control tests corroborated the reliability of the method. The authors found that the fat content of the normal serum fluctuates between 350 and 500 mg. per hundred cubic centimeters. Greatly increased fat content was detected in uremia, diabetes and icterus. The authors emphasize that all containers used for this test should be cleansed with chromosulphuric acid.

Zeitschrift f. Geburtshülfe u. Gynäkologie, Stuttgart

111: 1-136 (June 21) 1935. Partial Index

*Relation Between Histology, Prognosis and Therapy of Genital Carcinoma. P. Feldweg.—p. 1.
Action of Gonadotropic Substance on Human Ovary and Its Relation to Anterior Lobe of Hypophysis. K. J. Anselmino and F. Hoffmann. —p. 26.
*Pseudomyxoma of Peritoneum. T. Antoine.—p. 37.
Pathologic and Clinical Aspects of Sixty Cases of Gastro-Enterogenous Ovarian Carcinoma. G. Opitz.—p. 54.
Amino Acid Metabolism in Pregnancy. J. Botella-Llusiá.—p. 68.

Relation Between Histology and Prognosis in Genital Carcinoma.—Feldweg emphasizes that the mixed cancers (squamous cell carcinoma and adenocarcinoma combined) and the structureless cancers must not be disregarded in the histologic classification of cancers. He observed that the maturity of the carcinomas increases with increasing age of the patient. He found that the results of the surgical treatment were slightly better in the less mature cancers. He noted considerable differences in the ray sensitivity of the various types of cancer. He found that the ray sensitivity of adenocarcinomas in the cervix and in the body of the uterus is less than that of squamous cell carcinomas. Fractional irradiation produces the best therapeutic results in cancers of average maturity, irrespective of where they are located and what degree of differentiation they present. The prospects of irradiation are best in cancers with a moderate number of mitoses and with a moderate degree of cornification. Severe inflammatory reaction in the connective tissue indicates a more favorable prognosis for irradiation or surgical treatment than does a milder reaction.

Pseudomyxoma of Peritoneum.—Antoine describes seven cases. He maintains that the pseudomyxoma may originate in the appendix (the intestine) as well as in the ovary. Simultaneously existing pseudomyxomatous changes in ovary and appendix have developed side by side. The relatively frequent simultaneous involvement of the two organs is due to a tumor predisposition (atresia of the proximal portion) of the appendix. The jelly-like secretion is produced by the epithelium. The penetration of the jelly-like substance into the connective tissue is caused neither by the great pressure in the cyst spaces nor by a revision of the direction of the secretion from the cell but rather by a rarefaction of the connective tissue with compensatory filling of the spaces with the jelly-like substance. In discussing the treatment, the author states that the surgical treatment should be as radical as possible and should be followed by roentgen irradiation.

Zeitschrift für Krebsforschung, Berlin

42: 93-162 (June 8) 1935

*So-Called Endotheliomas of Pleura. S. Scheidegger.—p. 93.
Cellular Allergy and Genesis of Cancer. O. Reuterwall.—p. 117.
Relations Between Carcinoma and Tuberculosis in Human Subjects. Gertrud Heddaeus.—p. 140.

So-Called Endotheliomas of Pleura.—Scheidegger points out that epitheliomas of the lung are mentioned much more frequently in the older than in the contemporary literature. Following a review of the literature on pulmonary tumors, he describes four tumors of the pleura and lung. In three cases of primary tumors that had developed in the pleura, endothelioid formations and peculiar tailed cell forms were found in addition to true epithelial cell accumulations. In the fourth case, a true bronchial carcinoma, the same formations were found. In spite of their partially uncharacteristic structure, the pleural tumors cannot be traced to the surface cells. If tumors develop from the surface cells, they must be mesenchymal formations. However, so far the literature records no such observations. The author observed sarcoma-like formations in an immature primary peritoneal tumor and typical endotheliomatous formations in a multicentric primary tumor of the liver. In the latter case the development of tumor cells from the hepatic epithelium could be observed. All tumors described by the author must be regarded as immature and highly malignant. He advises that such terms as endothelioma, mesothelioma and perithelioma be avoided. He is of the opinion that the cancers of the pleura originate in displayed epithelial tissue buds. He wants the term epithelioma restricted to tumors that really originate in the vessels. Endotheliomatous formations and long-tailed cell forms are frequently found in pulmonary and pleural carcinomas.

Zentralblatt für Chirurgie, Leipzig

62: 1505-1568 (June 29) 1935. Partial Index

*Surgical Treatment of Nonresectable Duodenal Ulcer. F. Hollenbach. —p. 1509.
*Further Experimental Studies on Destruction of Syphilitic Virus in Conserved Blood. P. Oganesjan, E. Salkind and V. Kudrjavceva.—p. 1513.
Failures in Surgical Treatment of Ulcer of Stomach and of Duodenum. F. Rabboni.—p. 1518.
Prophylactic Measures in Surgical Treatment of Acute Cholecystitis. A. I. Melentjeva.—p. 1527.
Embolism of Both Axillary Arteries. F. Kazda.—p. 1529.

Surgical Treatment of Nonresectable Duodenal Ulcer.—Hollenbach shows that the surgical treatment of the nonresectable duodenal ulcer has been the subject of considerable

dispute in recent years, for neither gastro-enterostomy with closure of the pylorus nor Eiselsberg's exclusion has given satisfactory results. Consequently the duodenal ulcer the resection of which is impossible on account of its close relation to the pancreas or to the hepatoduodenal ligament can be treated by only two methods: by simple gastro-enterostomy or by Finsterer's "resection for exclusion," designated also as palliative resection and consisting in large resection of the stomach with or without removal of the pylorus. The author discusses the attitude of several leading gastric surgeons, showing that in recent years resection for exclusion has been widely recommended but is still being rejected by some. He himself has performed it in seventy-five cases and in all but five cases has removed the pylorus. There were three fatalities among the seventy-five cases. In one case the fatality was caused by peritonitis resulting from duodenal insufficiency, in another by pulmonary embolism and in the third by a hemorrhage from the ulcer. A peptic ulcer developed in one case, but more than 90 per cent of the patients recovered completely. The author states that in the majority of cases the duodenum was severed on the upper edge of the ulcer and in some cases the resection was made right through the ulcer. He points out that the indurated tissues in the head of the pancreas are favorable for the suturing of the duodenum. By two rows of sutures through the thickened pancreatic covering and the anterior duodenal wall, duodenal closure can be done rapidly and without difficulty. In a case in which death resulted from an insufficiency of the duodenal stump, the author recognized the limits of this operative method. He thinks that in case of an ulcer which is far down and on the posterior wall and in which no induration has developed in the head of the pancreas it is difficult to perform the resection along the upper edge of the ulcer or through the ulcer, because closing of the duodenum will be extremely difficult. In such cases it is advisable not to remove the pylorus.

Destruction of Syphilitic Virus in Conserved Blood.—The experiments reported by Oganesjan and his collaborators were made in order to determine the behavior of the syphilitic virus in conserved blood and to find a method of destroying the virus without making the blood unsuitable for transfusion purposes. It was found that five days of storage in the refrigerator is sufficient to destroy the spirochetes in the conserved blood. The addition of quinine dihydrochloride in a concentration of 1:1,000 effects the destruction of the syphilitic virus in less than three days. If the conserved blood contains only a small number of spirochetes, the process of destruction is more rapid. The authors emphasize that the destruction of the syphilitic virus in the course of the storage of conserved blood does not justify neglect of the venerologic control of the donors. They merely wish to show that in case of transfusion of conserved blood there is less danger of the transmission of syphilis than if fresh blood is used for transfusion.

Zentralblatt für Gynäkologie, Leipzig

59: 1505-1568 (June 29) 1935. Partial Index

Contribution to Theory of Menstrual Bleeding. C. Kaufmann.—p. 1508.
*Intermittent and Prophylactic Insulin Therapy in Menorrhagias and Metrorrhagias. E. Klaften.—p. 1512.
Technic of Tubal Sterilization According to Madlener. H. Ohligmacher.—p. 1532.
Important Obstetric Manipulations and Their Correct Terminology. F. Eberhart.—p. 1546.

Insulin Therapy in Menorrhagia and Metrorrhagia.—Klaften states that the observation that menstruation is often postponed, when vaginal insulin treatment is employed for erosions or ulcerations, induced him to try insulin therapy in cases of polymenorrhea; that is, in patients in whom menstruation recurred every fourteen or sixteen days and persisted for from eight to fourteen days. He tried insulin therapy also in hypermenorrhea, in juvenile hemorrhagic metropathia, in preclimacteric metropathia and in hemorrhages resulting from myomas and disturbances of the adnexa. A later inspection of the literature disclosed that other investigators had observed a connection between the ovarian cycle and the action of insulin and that some had found a favorable action of insulin on menstrual disturbances. In menorrhagias and in metropathic hemorrhages, the author's results with insulin therapy were not quite as favorable as those reported by some other investigators. He thinks that the difference is due to the fact that he observed his patients for longer periods. However, he too observed a decrease in the duration and in the intensity of the hemorrhages in a considerable number of patients. In hemorrhages of inflammatory origin, other authors obtained more favorable results than did the author. However, his observations largely coincided with those of one other investigator in hemorrhages caused by myomas, polyps and anatomic changes in the uterine wall, such as chronic metritis, fibrosis of the uterus, and adhesive perimetritis, for in these cases insulin therapy had little effect. The author found cases of polymenorrhea well suited for insulin therapy, for the prophylactic administration of insulin prolonged the interval between the menstrual periods from fourteen to twenty-one, twenty-four and finally twenty-eight days. Moreover, the duration and the intensity of the menstrual bleeding were considerably reduced in a number of cases. To make the prophylactic administration of insulin effective, it was necessary to administer the insulin several days before the expected menstruation; when the insulin was given only during the last forty-eight hours, it proved ineffective. He discusses the action of insulin and describes animal experiments conducted to gain a better insight into this action mechanism. He concludes that the favorable results obtained with insulin therapy in the various forms of pathologic hemorrhages are the result of the improvement it produces in the metabolic processes; that is, better utilization of the carbohydrates, better glycogen fixation, more adequate water binding power of the cells and modification of the sympathetic nervous system, of the ovarian functions and probably also of the hypophysis. Correct selection of the cases, exact dosage and prolonged intermittent treatment are the fundamental requirements for the success of the insulin treatment. The simultaneous administration of ergotamine tartrate is contraindicated, as it increases the sensitivity to insulin.

Bibliotek for Læger, Copenhagen

127: 221-256 (June) 1935

*Myocardiac Infarct: Review of Symptomatology and Diagnosis Based on Twenty-Eight Observations; C'cn. J. E. Holst.—p. 221.
Studies on Blood Sugar and Glycosuria in Exophthalmic Goiter. W. T. Andersen.—p. 245.

Myocardiac Infarct.—Holst states that many of the symptoms of myocardiac infarct are so transitory that they can be confirmed only on examination at certain times and on repeated examinations. The rise of temperature is probably most often slight, but 39 C. (102.2 F.), possibly more, is frequent even in patients who recover; the duration of the fever is as a rule longer than commonly indicated, often from two to four weeks. Three types of leukocytosis with different pathogenesis may be seen. The sedimentation reaction is increased in practically all cases but is sometimes so slight and transient that it is demonstrated only on repeated examinations. The changes in the electrocardiogram consist of disturbances in rhythm observed also in other conditions, of paroxysmal ventricular tachycardia and, more nearly pathognomic for myocardiac infarct, of a shifting of the ST interval, a peculiar arch-shaped configuration of the ST interval and transitory inversions of the T deflections. The frequent and often misleading occurrence of gastrointestinal symptoms is discussed. Two typical and two atypical cases are described.

Hospitalstidende, Copenhagen

78: 533-560 (May 14) 1935

*"Spontaneous" Healing of Cavities. N. J. Strandgaard.—p. 533.
Investigation of Vitamin E Content in Foods and in Preparations of Oil of Wheat Germ. A. Ringsted.—p. 546.
Congenital Dystrophia Brevicollis. T. K. With.—p. 556.

"Spontaneous" Healing of Cavities.—In three cases of tuberculosis of the lungs reported by Strandgaard there had been symptoms for four, fifteen and three months, respectively, and on admission the roentgenogram apparently showed cavities 3.5, 3 and 4.5 cm. in diameter, respectively. During ordinary treatment in a sanatorium for from seven and one-half to twelve months the cavities wholly disappeared and simultaneously a marked general improvement set in. Seven months after discharge the improvement was maintained.